United States Department of Agriculture

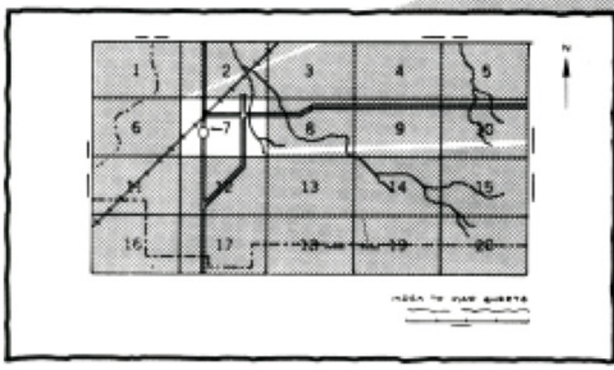
Soil Conservation Service

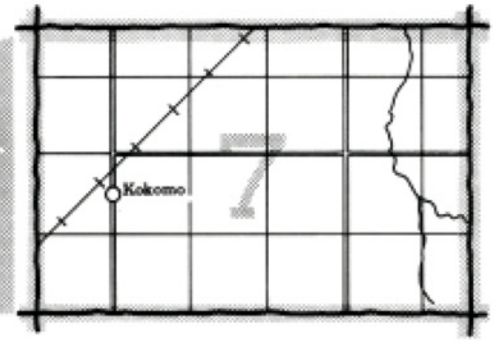
In cooperation with Kentucky Department for Natural Resources and Environmental Protection and Kentucky Agricultural Experiment Station

Soil Survey of Green and Taylor Counties Kentucky

HOW TO USE

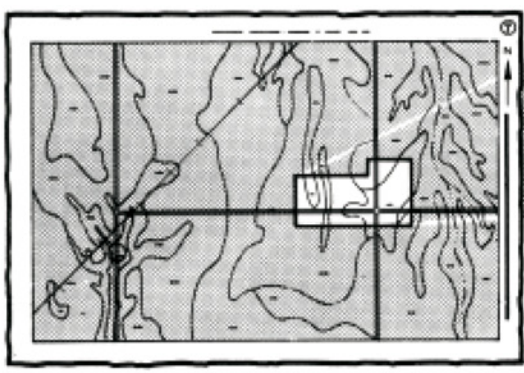
1. Locate your area of interest on the ''Index to Map Sheets''

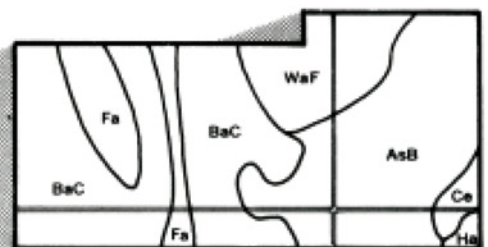




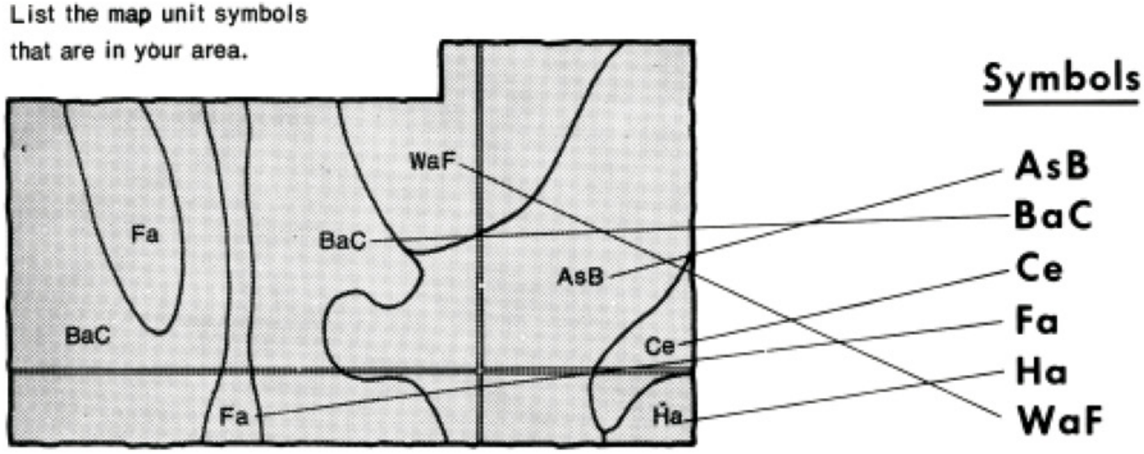
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.



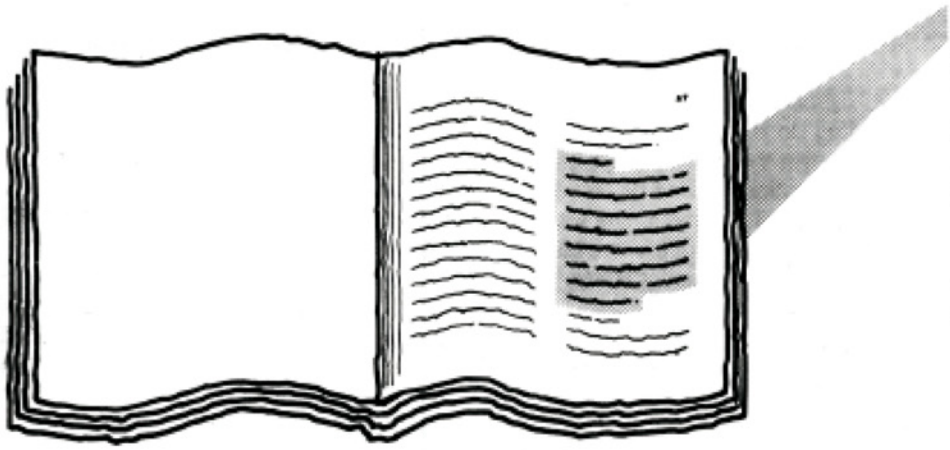


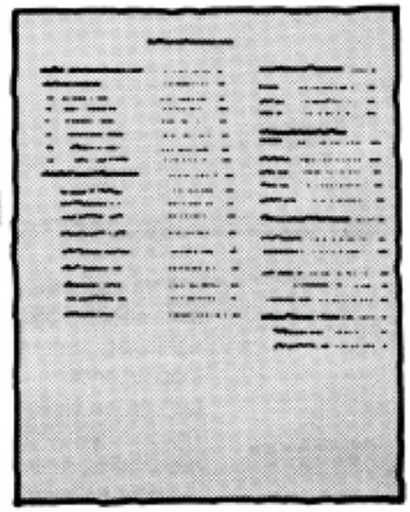
4. List the **map** unit symbols that are in your area.



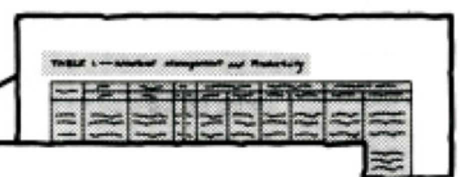
THIS SOIL SURVEY

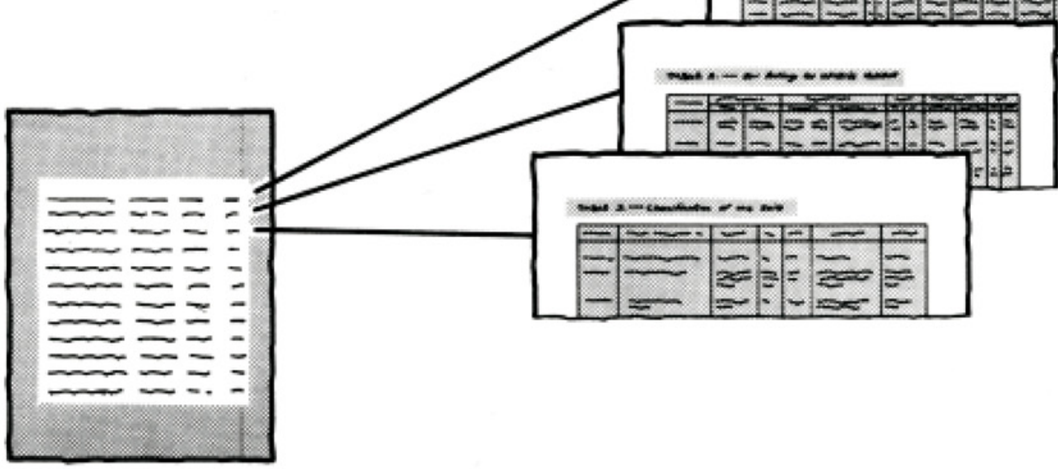
5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.





6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.





7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was performed in the period 1972-78. Soil names and descriptions were approved in 1979. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1979. This survey was made cooperatively by the Soil Conservation Service, the Kentucky Department for Natural Resources and Environmental Protection, and the Kentucky Agricultural Experiment Station. It is part of the technical assistance furnished to the Green County Conservation District and Taylor County Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Pasture on Frederick silt loam, 6 to 12 percent slopes. Flowering dogwoods were left for beautification when this area was cleared of brush.

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Issued July 1982

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foreword

This soil survey contains information that can be used in land-planning programs in Green and Taylor Counties. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

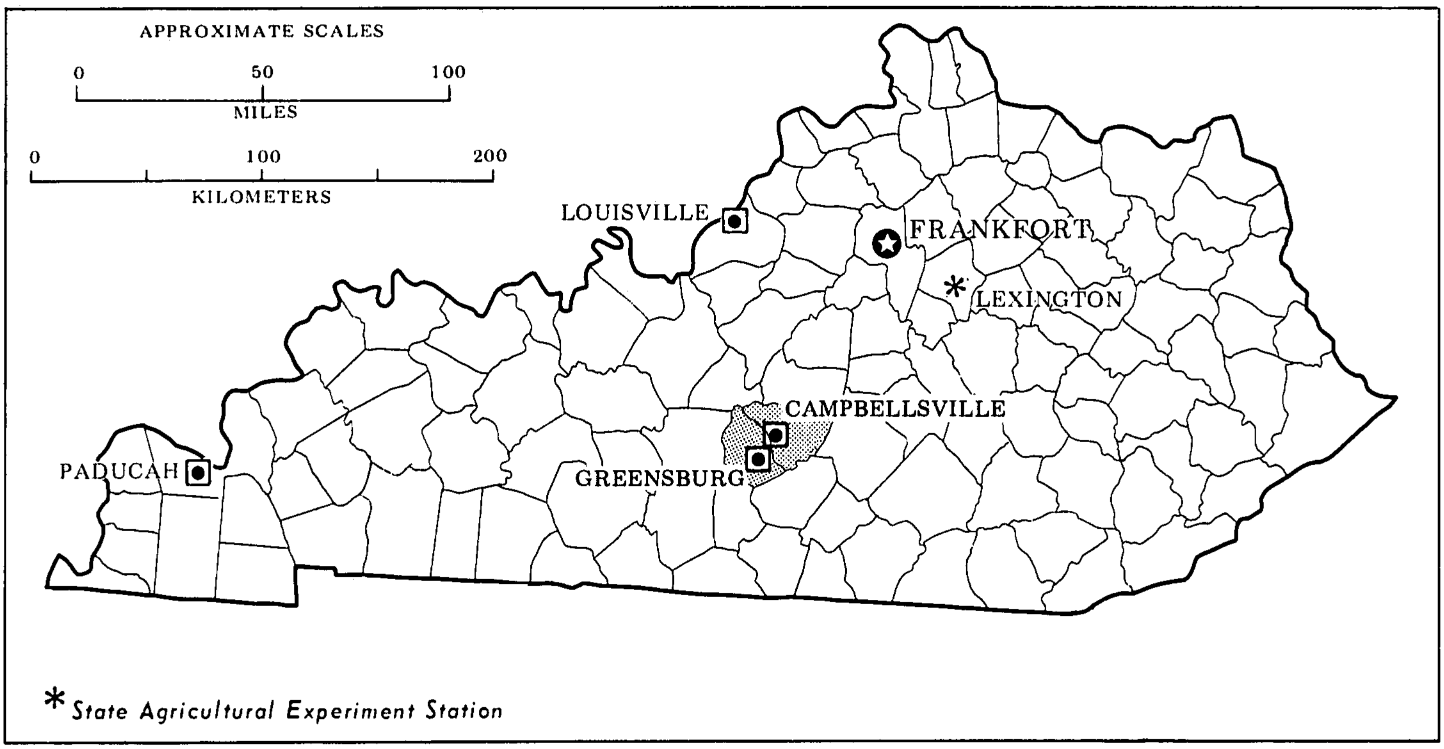
This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

Eddie L. Wood

Eddie L. Wood
State Conservationist
Soil Conservation Service



Location of Green and Taylor Counties in Kentucky.

soil survey of
Green and Taylor Counties, Kentucky

By James C. Ross and Thomas R. Leathers, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
in cooperation with
Kentucky Department for Natural Resources and Environmental Protection
and Kentucky Agricultural Experiment Station

GREEN AND TAYLOR COUNTIES are near the geographical center of Kentucky. The total combined area is 566 square miles, or 362,240 acres. There are 180,480 acres in Green County and 181,760 acres in Taylor County. Green River Reservoir in Taylor County contains about 4,480 acres. According to the 1970 census, the population of Green County is 10,350 and the population of Taylor County is 17,138. Greensburg is the county seat of Green County, and Campbellsville is the county seat of Taylor County.

Almost all of the soils in the survey area are acid and respond to applications of lime and fertilizer. The soils in the eastern and northeastern parts of Taylor County are on very steep uplands and in comparatively wide valleys. The upland soils are derived mostly from siltstone and limestone. The soils in the valleys are mostly colluvial over clay shale or thinly laminated black shale. In the northwestern part of Green and Taylor Counties, the soils are on steep uplands; they are derived from sandstone and limestone. Most of the remaining part of the counties is gently sloping to moderately steep upland soils derived mostly from limestone.

Elevation ranges from about 500 to about 1,100 feet above sea level. The climate is temperate, and the growing season (the time between the last spring and the first fall temperature of 32 degrees) averages about 184 days.

general nature of the survey area

This section provides general information about the climate; history; geology; relief and drainage; farming; industry, transportation, and markets; and recreation of Green and Taylor Counties.

climate

Prepared by the National Climatic Center, Asheville, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Greensburg, Kentucky, in the period 1951 to 1974. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 36 degrees F, and the average daily minimum temperature is 25 degrees. The lowest temperature on record, which occurred at Greensburg on January 25, 1963 is -25 degrees. In summer the average temperature is 75 degrees, and the average daily maximum temperature is 88 degrees. The highest recorded temperature, which occurred at Greensburg on July 27, 1952, is 106 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 50 inches. Of this, 27 inches, or 54 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 22 inches. The heaviest 1-day

rainfall during the period of record was 7.05 inches at Greensburg on August 1, 1967. Thunderstorms occur on about 50 days each year, and most occur in summer.

Average seasonal snowfall is 13 inches. The greatest snow depth at any one time during the period of record was 15 inches. On an average of 7 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 70 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 11 miles per hour, in winter.

history

Green County was organized in 1792 from parts of Lincoln and Nelson Counties. It was the 16th county formed and was named in honor of General Nathanael Greene, a Revolutionary War hero. Greensburg, the county seat, was established in 1794.

Taylor County was organized in 1848 from Green County. It was the 100th county formed and was named in honor of General Zachary Taylor, who grew up in Kentucky and was elected President in the year of the county's formation. Campbellsville, the county seat, was established in 1817 and was named after Adam Campbell, the first settler of the area.

Many of the early settlers of Green and Taylor Counties came from Virginia, North Carolina, and Pennsylvania (*5*).

geology

The Physiographic Areas of Green and Taylor Counties are the Western Pennyroyal, the Eastern Pennyroyal, and the Knobs. Most of the western half of Green County is in the Western Pennyroyal. The eastern half of Green County and most of Taylor County is in the Eastern Pennyroyal. The northeastern part of Taylor County is in the Knobs.

The geologic formation of Green and Taylor Counties is mostly the Mississippian System. Most of Green County is in the St. Louis Limestone Formation. Most of the western part of Taylor County is in the Salem-Warsaw Limestone Formation. Most of the eastern part of Taylor County is in the Fort Payne Limestone Formation. The Knobs area, of the northeastern part of Taylor County, is in the New Providence (green) Shale of the Lower Mississippian System and the New Albany (black) Shale of the Devonian System.

relief and drainage

The topography of Green and Taylor Counties is gently sloping to moderately steep and very steep near the streams. Some parts of the counties have karst topography with small streams terminating into sinkholes.

Green and Taylor Counties are in the Green River Watershed. Green River flows westward through the two counties. Its tributaries in these counties are Little Barren River, Brush Creeks (Big and Little), Russell Creek, Pitman Creeks (Big, Middle, and Little), and Robinson Creek.

Green River Reservoir is in the southern part of Taylor County. It was formed by a flood control dam built by the Army Corps of Engineers, which was completed in 1969. This 8,200 acre lake, which is partly in Adair County, impounds the waters of Green River and Robinson Creek. About 4,480 acres of the lake are in Taylor County.

farming

The U.S. Census of Agriculture reports that in 1974 there were 1,436 farms in Green County, averaging 104 acres each. Eighty-three percent of the 180,480 acres in the county was in farms.

The census for Taylor County reports 1,071 farms with an average of 114 acres in 1974. Taylor County had 69 percent of its 177,280 acres of land in farms.

Growing row crops, hay, and pasture and raising livestock are the main farm enterprises of the two counties. Corn and wheat are the principal grain crops. Corn is grown for silage and feed and as a cash crop. Wheat is grown for food and as a cash crop. Burley tobacco, the chief cash crop, is grown on government controlled 1,200 to 3,000 pounds base allotments on most farms (fig. 1).

Hay crops and pasture, which are grown for feed, are produced in mixtures of grasses and legumes. The principal hay crops are red clover, alfalfa, timothy, orchardgrass, Kentucky 31 fescue, and lespedeza. The most common pasture plants are Kentucky 31 fescue, orchardgrass, and ladino clover.

Dairy cattle, beef cattle, and hogs are the most important livestock for farm operations.

industry, transportation, and markets

Although most of the people in Green and Taylor Counties are engaged in farming, industry is also important to the economy of the area. Greensburg has a tobacco market and several small factories. Campbellsville has a large garment factory and several smaller factories. Pipelines of a large natural gas company traverse the counties. Local pumping stations are in each county.

Transportation facilities include a network of federal, state, and county highways that give access to all parts of the counties. Greensburg and Campbellsville are served by a railroad which extends from the main rail

Figure 1.—Burley tobacco growing on class II land.

system at Lebanon, Kentucky. Small aircraft use the Campbellsville airport.

The principal trading centers are Greensburg and Campbellsville. Some stores and dealers have recently located outside, but near, the two cities. Most of the livestock is sold at auction in each of the county seat towns. Tobacco is marketed at Greensburg and other nearby towns, including Lebanon and Springfield. Most of the milk is hauled to Campbellsville to dairy processing plants.

recreation

Both Greensburg and Campbellsville have city parks and golf courses. Green River Resevoir provides Green and Taylor Counties and neighboring counties with fishing, camping, and water skiing.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; and the kinds of rock. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, rangeland and woodland managers, engineers, planners, developers and builders, home buyers, and others.

general soil map units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

soil descriptions for Green County

1. Frederick-Nolichucky-Riney

Deep, well drained, sloping to steep loamy soils; on narrow ridgetops and side slopes

The landscape is a series of very narrow ridgetops that gradually break onto long, smooth, moderately steep and steep side slopes which descend to very narrow valleys (fig. 2). Slopes range from 6 to 30 percent, but they dominantly are 6 to 12 percent on the ridgetops and 20 to 30 percent on the side slopes.

This map unit makes up about 8 percent of the county. It is about 27 percent Frederick soils, 20 percent Nolichucky soils, 14 percent Riney soils, and 39 percent soils of minor extent.

Frederick soils commonly are steep and on side slopes. The surface layer is brown silt loam; however, in severely eroded spots it is yellowish red silty clay loam. The subsoil is moderately permeable and clayey.

Nolichucky soils are steep and on side slopes. The surface layer is brown loam. The moderately permeable subsoil is loamy in the upper part and clayey in the lower part.

Riney soils are sloping to moderately steep and are commonly on the ridgetops. The surface layer is brown loam. The subsoil is loamy and has moderately rapid permeability.

Of minor extent are Caneyville soils on side slopes; Mountview soils on ridgetops; Elk soils on the terraces; and Nolin, Newark, and Melvin soils on the flood plains.

About 5 percent of the acreage of these soils has been cleared. Tobacco, corn, hay and pasture, and garden crops are grown in small patches on the bottom lands and on the ridgetops. The Frederick and Nolichucky soils are generally uncleared and in mixed hardwoods.

The moderately steep and steep soils are poorly suited to cultivated crops or specialty crops. Slope and the hazard of erosion are the main limitations. These soils are suited to hay and pasture and well suited to trees. Because of steep slopes, most of the soils are poorly suited to urban uses, such as sanitary facilities, building site developments, and recreation uses.

2. Frederick-Mountview

Deep, well drained, gently sloping to moderately steep loamy soils; on side slopes and moderately wide ridgetops

The landscape is a series of moderately wide, gently sloping ridgetops that gradually break onto sloping and moderately steep side slopes which descend to narrow valleys. Some areas are karstic or dotted with bowl-shaped depressions and separated by very narrow ridges. Slopes commonly range from 2 to 20 percent but dominantly are 2 to 6 percent on ridgetops and 6 to 20 percent on side slopes.

This map unit makes up about 74 percent of the county. It is about 56 percent Frederick soils, 12 percent Mountview soils, and 32 percent soils of minor extent.

The Frederick soils commonly are sloping and moderately steep and on side slopes. The surface layer is brown silt loam; however, in severely eroded areas it is yellowish red silty clay loam. The subsoil is moderately permeable and clayey.

Mountview soils commonly are gently sloping and on ridgetops. The surface layer is dark yellowish brown silt loam, and the upper part of the subsoil is strong brown and loamy. The lower part of the subsoil is moderately permeable, reddish clay that formed in residuum from limestone.

Of minor extent are Garmon, Dickson, Taft, Caneyville, and Needmore soils on uplands; Elk, Morehead, and Otwell soils on terraces; and Nolin, Newark, and Melvin soils on flood plains.

About 70 percent of the acreage of these soils has

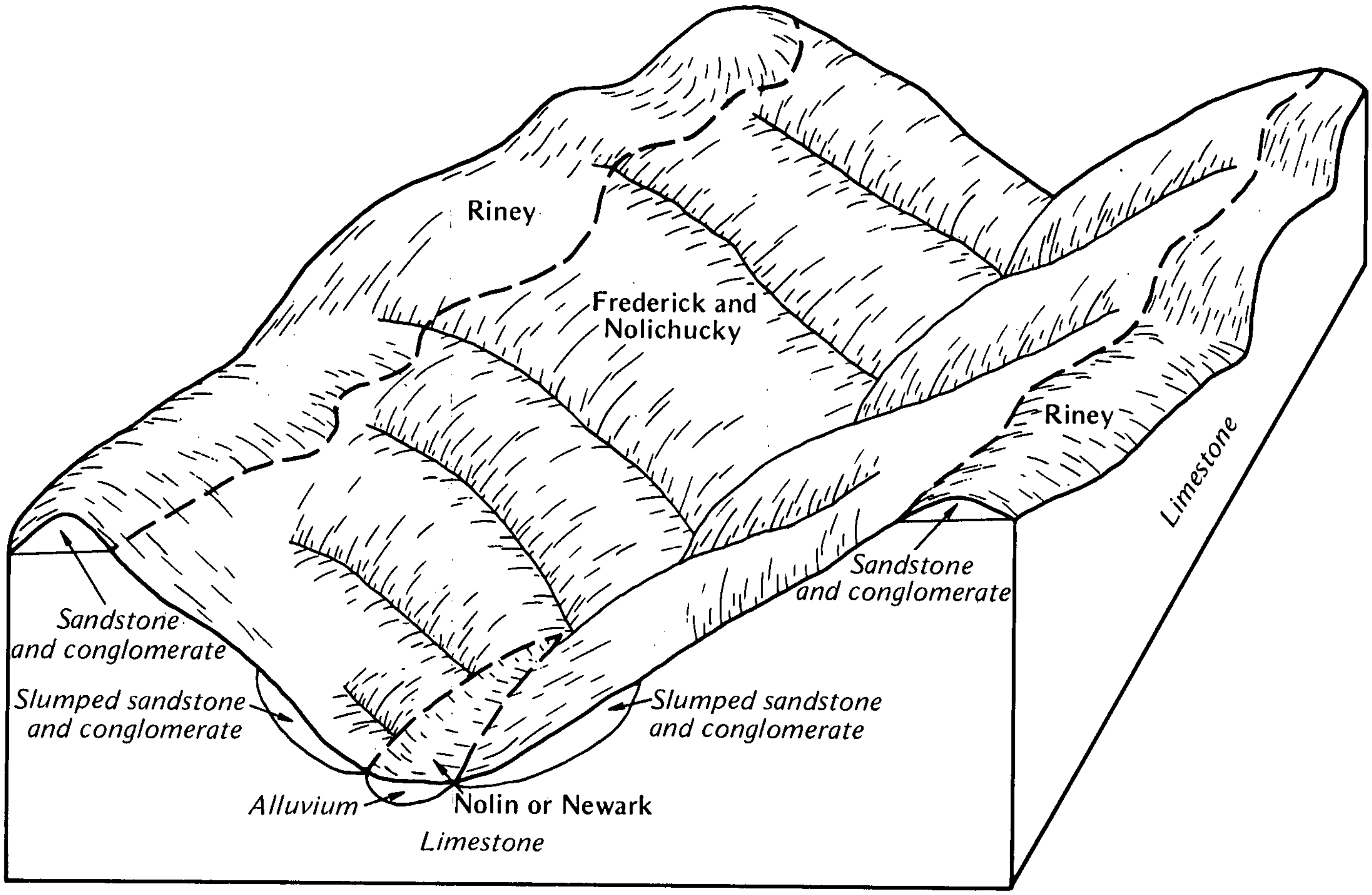


Figure 2.—Pattern of soils and underlying material in the Frederick-Nolichucky-Riney general soil map unit.

been cleared. Corn, hay and pasture, and tobacco along with wheat and soybeans are grown in the area. Generally, the mixed hardwood forests that remain are on steep or wet areas.

The gently sloping and sloping soils are suited to cultivated crops, such as corn and tobacco. They are also suited to specialty crops, such as vegetables. The hazard of erosion is the main limitation for farming. Most of the remaining land that has been cleared is well suited to hay and pasture. Steepness of slopes is the main limitation. All of the soils in this unit are well suited to trees. Generally, the major soils are suited to urban uses, such as sanitary facilities and building site development. These soils are generally suited to such recreation uses as campsites and picnic areas but are poorly suited to playgrounds because of the steepness of slopes.

3. Frederick-Mountview-Dickson

Deep, well drained and moderately well drained, gently sloping to moderately steep loamy soils; on side slopes and ridgetops

The landscape is mostly gently sloping and sloping areas. Moderately steep areas are near the streams.

This map unit makes up about 3 percent of the county. It is about 46 percent Frederick soils, 25 percent Mountview soils, 17 percent Dickson soils, and 12 percent soils of minor extent.

Frederick soils commonly are sloping and moderately steep and on side slopes. The surface layer is brown silt loam; however, in severely eroded spots it is yellowish red silty clay loam. The subsoil is moderately permeable and clayey.

Mountview soils commonly are gently sloping and on ridgetops. The surface layer is dark yellowish brown silt loam. The upper part of the subsoil is strong brown and loamy, and the lower part is moderately permeable, reddish, and clayey. The lower part formed in residuum from limestone.

Dickson soils commonly are gently sloping and on broad ridgetops. The surface layer is brown silt loam. The upper part of the subsoil is yellowish brown and loamy. It has a restricted rooting zone, and the lower part of the subsoil has moderately slow permeability

because of the presence of a fragipan. The part of the subsoil below the fragipan is mottled yellowish red, yellowish brown, and gray. This clayey part of the subsoil formed in residuum from limestone, and the upper part of the subsoil formed in silty deposits.

Of minor extent are Frankstown, Taft, and Caneyville soils on uplands; Elk, Morehead, and Otwell soils on terraces; and Nolin, Newark, and Melvin on flood plains.

About 90 percent of the acreage of these soils has been cleared. Corn, hay and pasture, and tobacco along with some wheat and soybeans are grown in the area. Generally, the mixed hardwood forests that remain are on very steep soils.

The nearly level to sloping soils are suited to cultivated crops, such as corn and tobacco. These soils are also suited to such specialty crops as vegetables. The hazard of erosion is the main limitation for farming. Most of the remaining land that has been cleared is well suited to hay and pasture. All of the soils are well suited to trees. Generally, the soils are suited to urban uses, such as sanitary facilities and building site developments. They are generally suited to such recreation uses as campsites and picnic areas, but are poorly suited to playgrounds because of the steepness of slopes.

4. Frederick-Caneyville

Deep and moderately deep, well drained, sloping to steep loamy soils; on ridgetops and side slopes

The landscape consists of narrow ridges and steep side slopes that are mostly rocky. Slopes range from 6 to 20 percent on the ridges and from 12 to 30 percent on the side slopes but dominantly are 20 to 30 percent on the side slopes.

This map unit makes up about 15 percent of the county. It is about 46 percent Frederick soils, 14 percent Caneyville soils, and 40 percent soils of minor extent.

Frederick soils commonly are sloping and moderately steep. They are on ridgetops and steep side slopes. The surface layer is brown silt loam; however, in severely eroded spots it is yellowish red silty clay loam. The subsoil is moderately permeable and clayey.

Caneyville soils are steep and on side slopes. Limestone rock outcrops are scattered on the surface. The clayey subsoil is underlain by limestone bedrock at a depth of 20 to 40 inches.

Of minor extent are Mountview, Frankstown, Dickson, and Needmore soils on uplands; Elk and Otwell soils on the terraces; and Nolin, Newark, and Melvin soils on the flood plains.

About 40 percent of the acreage of these soils has been cleared. Hay and pasture are the main crops. The steep hillsides are generally uncleared and are in mixed hardwoods at various stages of growth.

The soils in this unit are poorly suited to cultivated crops or specialty crops because of steepness of slopes, the hazard of erosion, and rocky slopes. These soils are suited to hay and pasture, but the steep and rocky slopes can create equipment limitations. The soils are well suited to trees. Because of rock outcrops, the moderate depth to bedrock, and steepness of slopes, these soils are poorly suited to urban uses, such as sanitary facilities and building site developments, and are poorly suited to recreation uses.

soil descriptions for Taylor County

1. Frederick-Nolichucky-Riney

Deep, well drained, sloping to steep loamy soils; on narrow ridgetops and side slopes

The landscape is a series of very narrow ridgetops that gradually break onto long, smooth, moderately steep and steep side slopes which descend to very narrow valleys (see fig. 2). Slopes range from 6 to 30 percent but dominantly are 6 to 12 percent on the ridgetops and 20 to 30 percent on the side slopes.

This map unit makes up about 8 percent of the county. It is about 31 percent Frederick soils, 20 percent Nolichucky soils, 20 percent Riney soils, and 29 percent soils of minor extent.

Frederick soils commonly are steep and on side slopes. The surface layer is brown silt loam; however, in severely eroded spots it is yellowish red silty clay loam. The subsoil is moderately permeable and clayey.

Nolichucky soils are moderately steep and steep and on side slopes. The surface layer is brown loam. The moderately permeable subsoil is loamy in the upper part and clayey in the lower part.

Riney soils are sloping to moderately steep and are commonly on the ridgetops. The surface layer is brown loam. The subsoil is loamy and has moderately rapid permeability.

Of minor extent are Caneyville soils on side slopes and Mountview soils on ridgetops; Elk soils on the terraces; and Nolin, Newark, and Melvin soils on the flood plains.

About 5 percent of the acreage of these soils has been cleared. Tobacco, corn, hay and pasture, and garden crops are grown in small patches on the bottom lands and on the ridgetops. The Frederick and Nolichucky soils are generally uncleared and in mixed hardwoods.

The moderately steep to steep soils in this map unit are poorly suited to cultivated crops or specialty crops. Slope and the hazard of erosion are the main limitations. The soils are suited to hay and pasture and well suited to trees. Because of steep slopes, most of the soils are poorly suited to urban uses, such as sanitary facilities and building site developments, and poorly suited to recreation uses.

2. Frederick-Frankstown-Mountview

Deep, well drained, moderately steep to gently sloping loamy soils; on side slopes and moderately wide ridgetops

The landscape is a series of moderately wide, gently sloping ridgetops that gradually break onto sloping and moderately steep side slopes which descend to narrow valleys. Some areas have bowl-shaped depressions, or a karst, separated by very narrow ridges (fig. 3). Slopes commonly range from 2 to 20 percent but dominantly are 2 to 6 percent on the ridgetops and 6 to 20 percent on the side slopes.

This map unit makes up about 22 percent of the county. It is about 48 percent Frederick soils, 17 percent Frankstown soils, 16 percent Mountview soils, and 19 percent soils of minor extent.

Frederick soils commonly are sloping and moderately steep and on side slopes. The surface layer is brown silt loam; however, in severely eroded spots it is yellowish red silty clay loam. The subsoil is moderately permeable and clayey.

Frankstown soils commonly are sloping and moderately steep and are on side slopes. The surface layer is brown silt loam. The subsoil is yellowish brown and strong brown, loamy and cherty.

Mountview soils are gently sloping and on moderately wide ridgetops. The surface layer is dark yellowish brown silt loam. The upper part of the subsoil is strong brown and loamy. The lower part of the subsoil is moderately permeable, reddish clay that formed in residuum from limestone.

Of minor extent are Garmon, Shelocta, Dickson, Taft, Caneyville, and Needmore soils on uplands; Elk, Morehead, and Otwell soils on terraces; and Nolin, Newark, and Melvin soils on flood plains.

About 60 percent of the acreage of these soils has been cleared. Corn, hay and pasture, and tobacco along with some wheat and soybeans are grown on these

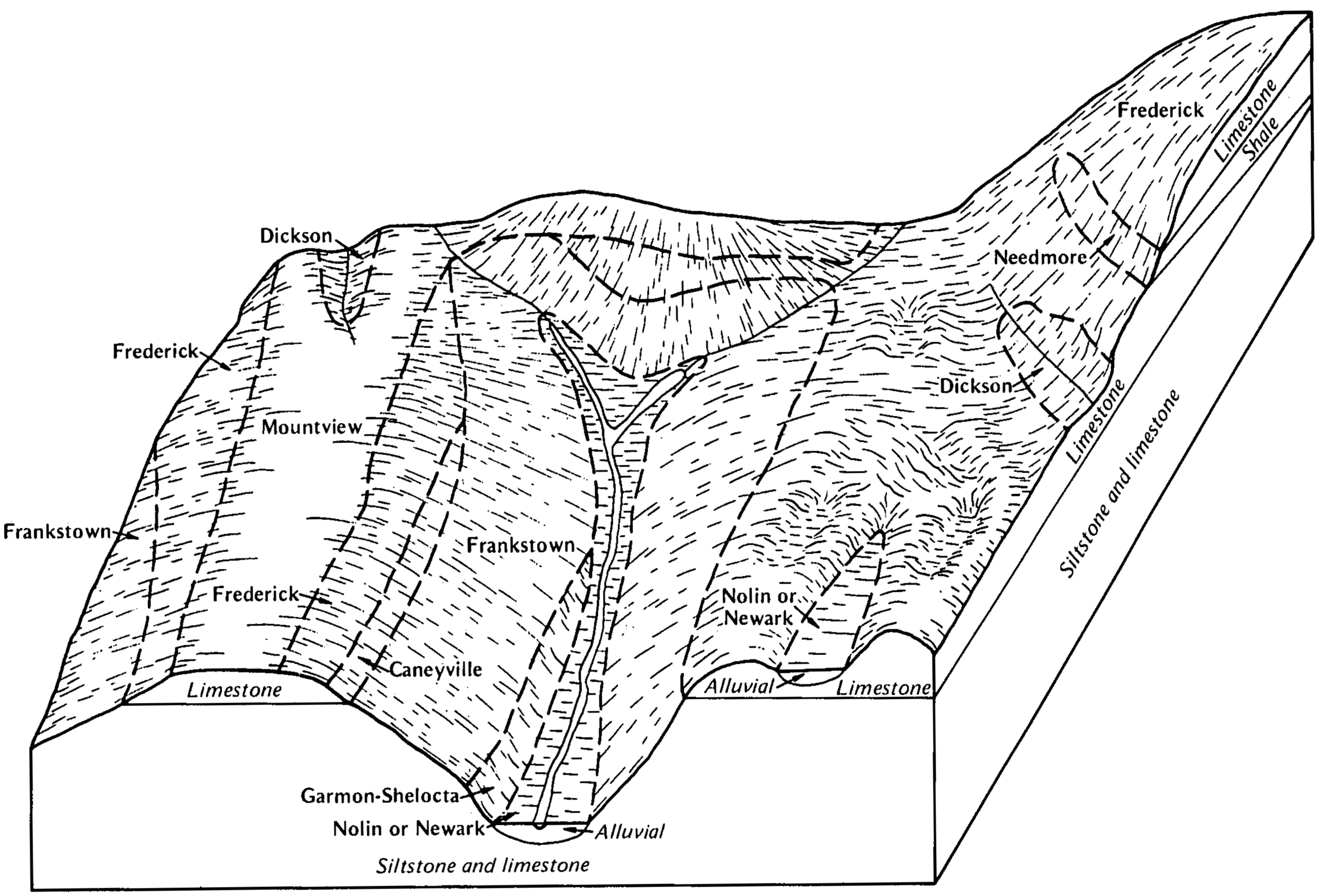


Figure 3.—Pattern of soils and underlying material in the Frederick-Frankstown-Mountview general soil map unit.

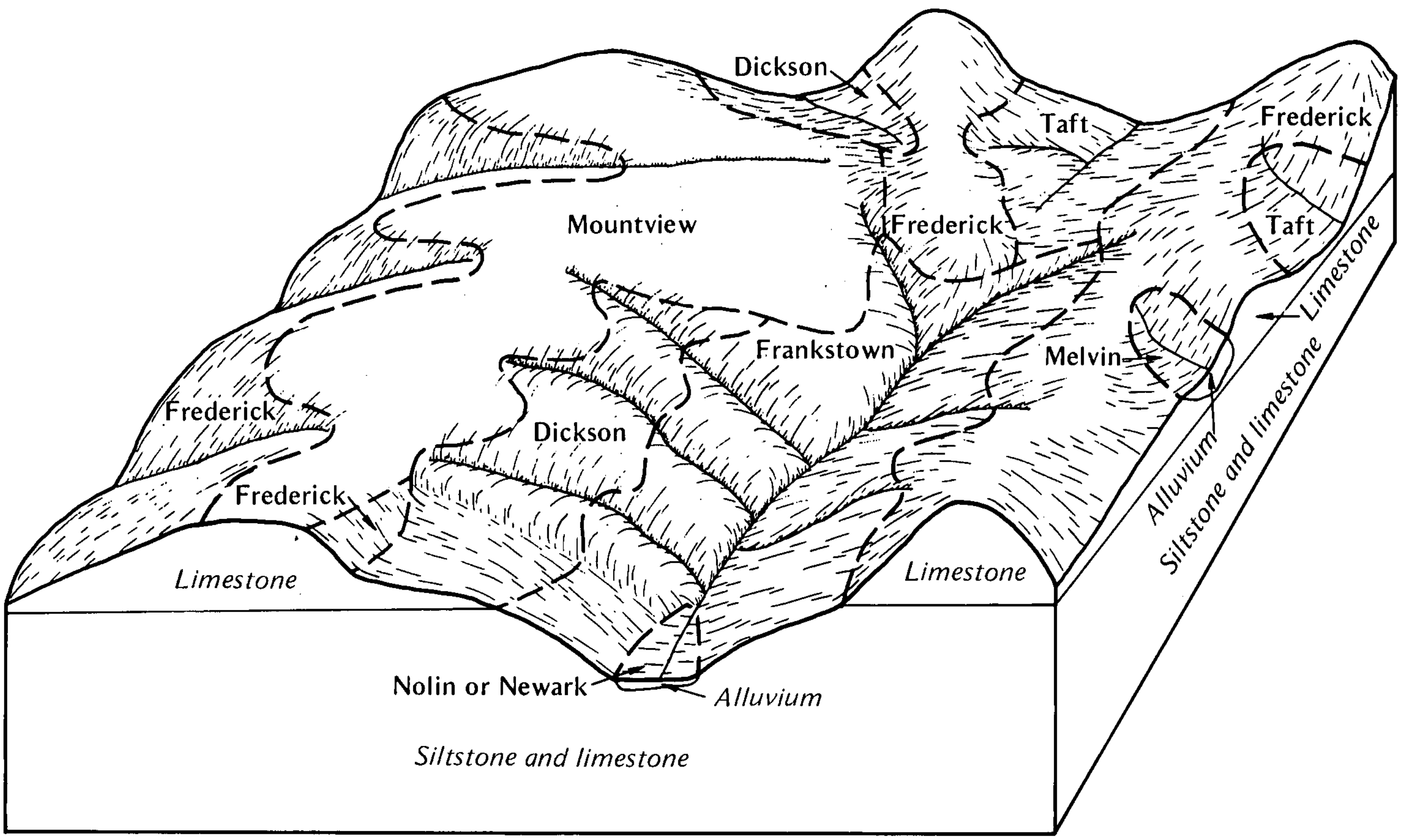


Figure 4.—Pattern of soil and underlying material in the Frederick-Mountview-Frankstown general soil map unit.

soils. Generally, the mixed hardwood forest that remains is on steep land.

The nearly level to sloping soils are suited to cultivated crops, such as corn and tobacco. These soils also are suited to specialty crops, such as vegetables. Most of the remaining land that has been cleared is well suited to hay and pasture. All of the soils in this unit are well suited to trees. The hazard of erosion is the main limitation for farming. Generally, the soils are suited to urban uses, such as sanitary facilities and building site development. These soils are generally suited to such recreation uses as campsites and picnic areas but poorly suited to playgrounds because of the steepness of slopes.

3. Frederick-Mountview-Frankstown

Deep, well drained, gently sloping loamy soils; on ridgetops and sloping to moderately steep soils that have a cherty or clayey subsoil; on side slopes

The landscape is mostly gently sloping to sloping with moderately steep areas near the streams (fig. 4).

This map unit makes up about 22 percent of the county. It is about 27 percent Frederick soils, 25 percent Mountview soils, 19 percent Frankstown soils, and 29 percent soils of minor extent.

Frederick soils are sloping and moderately steep and on side slopes. The surface layer is brown silt loam; however, in severely eroded spots it is yellowish red silty clay loam. The subsoil is moderately permeable and clayey.

Mountview soils commonly are gently sloping and on ridgetops. The surface layer is dark yellowish brown silt loam, and the upper part of the subsoil is strong brown and loamy. The lower part of the subsoil is moderately permeable, reddish clay that formed in residuum from limestone.

Frankstown soils are sloping and moderately steep and on side slopes. The surface layer is brown silt loam. The subsoil is yellowish brown and strong brown and loamy. The lower part of the subsoil is cherty.

Of minor extent are Dickson, Taft, and Caneyville soils on uplands; Elk, Morehead, and Otwell soils on terraces; and Nolin, Newark, and Melvin soils on flood plains.

About 85 percent of the acreage of these soils has been cleared. Corn, hay and pasture, and tobacco along with some wheat and soybeans are grown on these soils. Generally, the mixed hardwood forest that remains is on very steep land.

The nearly level to sloping soils are suited to cultivated crops, such as corn and tobacco. These soils are also suited to specialty crops, such as vegetables. The hazard of erosion is the main limitation for farming. Most of the remaining land that has been cleared is well suited to hay and pasture. All of the soils in this unit are well suited to trees. Generally, the major soils are suited to urban uses, such as sanitary facilties and building site developments. These soils are generally suited to such recreation uses as campsites and picnic areas but are poorly suited to playgrounds because of the steepness of slopes.

4. Garmon-Shelocta-Frankstown

Moderately deep and deep, well drained, sloping to very steep loamy soils; on side slopes and narrow ridgetops

The landscape is narrow, sloping ridgetops; very steep, long side slopes; and moderately wide valleys (fig. 5). Slopes range from 6 to 60 percent, but they dominantly are 6 to 20 percent on the ridgetops and 25 to 60 percent on the side slopes.

This map unit makes up about 39 percent of the county. It is about 20 percent Garmon soils, 18 percent Shelocta soils, 17 percent Frankstown soils, and 45 percent soils of minor extent.

Garmon soils are very steep and on side slopes. The surface layer and subsurface layer are brown and light yellowish brown silt loam. The subsoil is light yellowish brown and loamy. It is channery in the lower part. These soils formed in residuum from siltstone and limestone.

Shelocta soils generally are sloping to very steep and on side slopes. The surface layer is brown silt loam. The subsoil is yellowish brown and brownish yellow and loamy. It has some gravelly layers.

Frankstown soils are sloping and moderately steep and are on side slopes and narrow ridgetops. The surface layer is brown silt loam. The subsoil is yellowish brown and strong brown and loamy. It is cherty in the lower part.

Of minor extent are Colyer, Mountview, Monongahela, Lenberg, and Tyler soils on the uplands; Morehead and Otwell soils on the terraces; and Nolin, Newark, and Sensabaugh soils on flood plains.

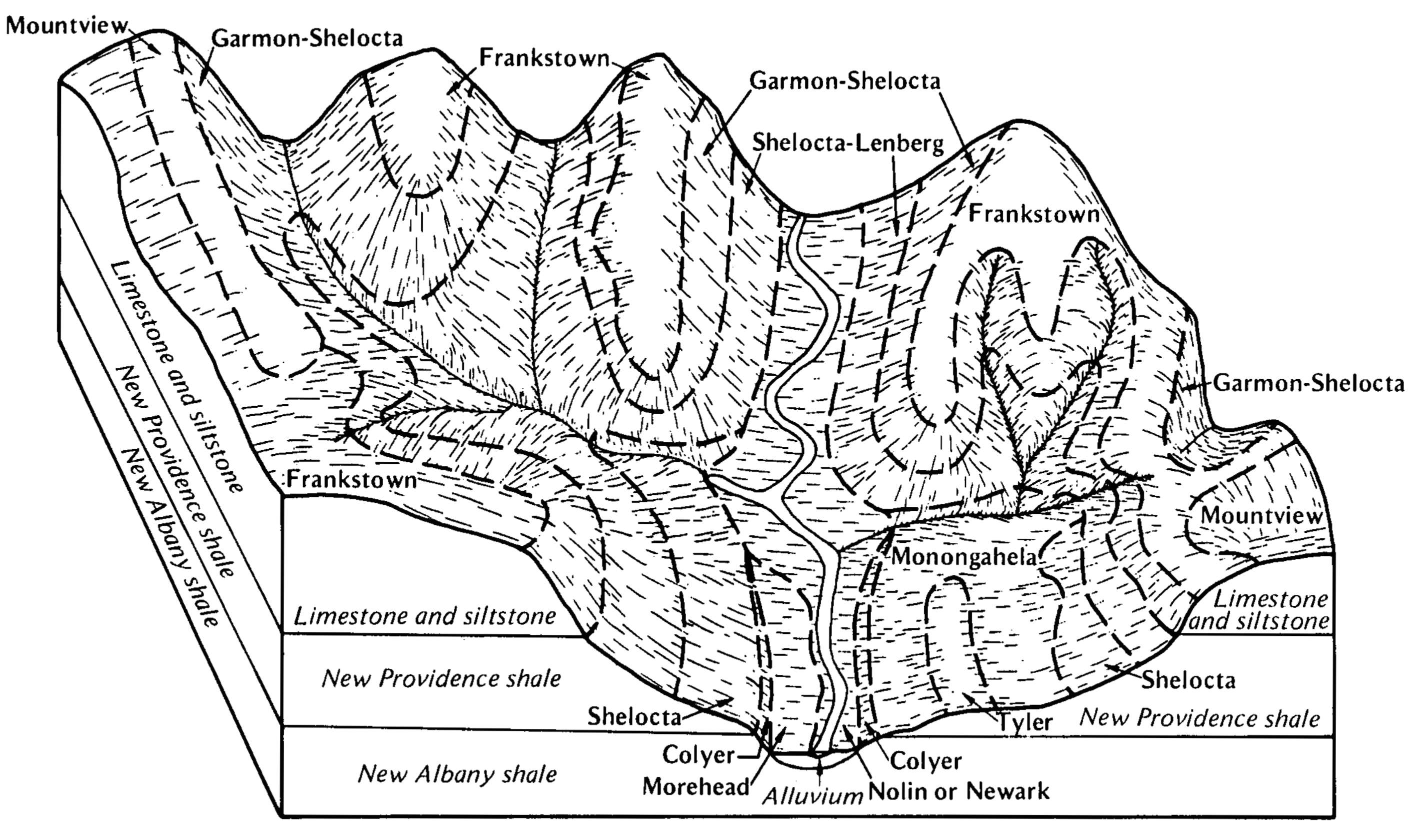


Figure 5.—Pattern of soils and underlying material in the Garmon-Shelocta-Frankstown general soil map unit.

About 30 percent of the acreage of these soils has been cleared. Corn, hay and pasture, and tobacco along with some wheat and soybeans are grown on these soils. The uncleared, very steep side slopes are in mixed hardwood forest.

The nearly level to sloping soils are suited to cultivated crops, such as corn and tobacco. They are also suited to such specialty crops as vegetables. The hazard of erosion and wetness are the main limitations for farming. Most of the remaining land that has been cleared is suited to hay and pasture. All of the soils in this map unit are suited to trees. Because of steep slopes or wetness, the soils in this map unit generally are poorly suited to urban uses, such as sanitary facilities, building site developments, and recreation uses.

5. Frederick-Mountview

Deep, well drained, gently sloping to moderately steep loamy soils; on side slopes and moderately wide ridgetops

The landscape is a series of moderately wide, gently sloping ridgetops that gradually break onto sloping to moderately steep side slopes which descend to narrow valleys. Some areas have bowl-shaped depressions, or a karst, separated by very narrow ridges. Slopes commonly range from 2 to 20 percent but dominantly are 2 to 6 percent on ridgetops and 6 to 20 percent on side slopes.

This map unit makes up about 9 percent of the county. It is about 57 percent Frederick soils, 12 percent Mountview soils, and 31 percent soils of minor extent.

Frederick soils commonly are sloping and moderately steep and on side slopes. The surface layer is brown silt loam; however, in severely eroded areas it is yellowish red silty clay loam. The subsoil is moderately permeable and clayey.

Mountview soils are gently sloping and on moderately wide ridgetops. The surface layer is dark yellowish brown silt loam, and the upper part of the subsoil is strong brown and loamy. The lower part of the subsoil is moderately permeable, reddish clay that formed in residuum from limestone.

Of minor extent are Garmon, Dickson, Taft, Caneyville, and Needmore soils on uplands; Elk, Morehead, and Otwell soils on terraces; and Nolin, Newark, and Melvin soils on flood plains.

About 70 percent of the acreage of these soils has been cleared. Corn, hay and pasture, and tobacco along with some wheat and soybeans are grown on these soils. Generally, the mixed hardwood forests that remain are on steep or wet land.

The nearly level to sloping soils are suited to cultivated crops, such as corn and tobacco. These soils are also suited to specialty crops, such as vegetables. The hazard of erosion is the main limitation for farming. Most of the remaining land that has been cleared is well suited to hay and pasture. All of the soils in this unit are well suited to trees. Generally, the major soils are suited to urban uses, such as sanitary facilities and building site developments. These soils are generally suited to such recreation uses as campsites and picnic areas but are poorly suited to playgrounds because of the steepness of slopes.

detailed soil map units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and management of the soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Frederick silt loam, 6 to 12 percent slopes, is one of several phases in the Frederick series.

Some map units are made up of two or more major soils. These map units are called soil complexes. A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Frederick-Nolichucky complex, 20 to 30 percent slopes, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

soil descriptions

Bo—Bonnie silt loam, terrace. This deep, nearly level, poorly drained soil is on low terraces. Slopes range from 0 to 2 percent. Areas range from 3 to 100 acres.

Typically, the surface layer is grayish brown silt loam about 8 inches thick. To a depth of 60 inches is light olive gray and light gray silt loam that has dark brown or yellowish brown mottles.

Permeability is moderate or moderately slow, and available water capacity is high. In unlimed areas, the surface layer and subsoil are strongly acid or very strongly acid. Surface runoff is very slow. The plow layer has low organic matter content. Tilth is good if excessive moisture is not a hindrance. Depth to the seasonal high water table ranges from 0 to 1 foot.

Included with this soil in mapping are small areas of Morehead and Otwell soils. These soils generally make up less than 15 percent of the mapped areas.

Most of the acreage of this Bonnie soil is used for pasture, although some areas are used as woodland. This soil is poorly suited to cultivated crops if it is not artificially drained. If drained, the soil is well suited to corn, soybeans, and wheat. Tile drainage is commonly used to control wetness. The hazard of erosion is slight. Minimum tillage; returning crop residue to the soil; and the use of cover crops, including grasses and legumes, in the cropping system help to maintain desirable soil structure and organic matter content.

If adequately drained, this soil is well suited to pasture and hay, but plant species that tolerate wetness should be planted. In addition to providing drainage, other management practices are renovating pasture, applying

lime and fertilizer, controlling grazing, and controlling undesirable vegetation.

The Bonnie soil is suited to eastern cottonwood, red maple, American sycamore, sweetgum, and pin oak. The management concerns are equipment limitations, seedling mortality, and plant competition. This soil is poorly suited to urban uses because of wetness.

This soil has been assigned to capability subclass IIIw and woodland suitability group 1w.

CaC—Caneyville silt loam, very rocky, 6 to 20 percent slopes. This moderately deep, well drained, sloping to moderately steep soil is on side slopes. Slopes range from 200 to 400 feet in length. Areas range from 3 to 100 acres.

Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil is yellowish red silty clay loam to a depth of about 12 inches and red silty clay to a depth of about 22 inches. The substratum to a depth of about 26 inches is dark red silty clay. Below that is limestone bedrock.

Permeability is moderately slow, and available water capacity is moderate. In unlimed areas, reaction in the upper part of the soil ranges from very strongly acid to neutral; it ranges from medium acid to mildly alkaline in the lower part. Surface runoff is rapid. The plow layer has moderate organic matter content but is difficult to till because of the limestone rock outcrops on the surface. About 3 to 15 percent of this map unit is covered with limestone rock outcrops. The subsoil has moderate shrink-swell potential. The root zone is moderately deep to limestone bedrock.

Included with this soil in mapping are intermingled areas of Frederick soils and some severely eroded spots of the Caneyville soil. The included soils make up 15 to 25 percent of the mapped area.

Most of the acreage of this Caneyville soil is used for pasture, although some areas are used as woodland. This soil is poorly suited to cultivated crops because it is rocky and has a very severe hazard of erosion.

This soil is suited to hay and pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

The Caneyville soil is suited to black oak, white oak, Virginia pine, and loblolly pine. The management concerns are the erosion hazard, equipment limitations, and plant competition.

This soil is poorly suited to urban uses. Depth to rock and slow permeability are limitations for sanitary facilities, and depth to rock and shrink-swell potential are limitations for buildings.

This soil has been assigned to capability subclass VIs and woodland suitability group 3x.

CaE—Caneyville-Frederick silt loams, very rocky, 20 to 30 percent slopes. This map unit consists of small areas of Caneyville and Frederick soils that are so intermingled that it was not practical to map them separately. The Caneyville soil is moderately deep, well drained, steep, and rocky. It is on side slopes with the deep, well drained, steep, and clayey Frederick soil. Slopes range from 200 to 500 feet in length. Areas range from 3 to 100 acres.

The Caneyville soil makes up about 50 to 70 percent of each mapped area. Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil, to a depth of about 12 inches, is yellowish red silty clay loam. To a depth of about 22 inches, it is red silty clay. The substratum to a depth of about 26 inches is dark red silty clay. Below that is limestone bedrock.

Permeability of the Caneyville soil is moderately slow, and available water capacity is moderate. In unlimed areas, reaction in the upper part of the soil ranges from very strongly acid to neutral; it ranges from medium acid to mildly alkaline in the lower part. Surface runoff is very rapid. The plow layer has moderate organic matter content but is difficult to till because of the limestone rock outcrops on the surface and the steep slopes. About 3 to 15 percent of this map unit is covered with limestone rock outcrops. The subsoil has moderate shrink-swell potential. The root zone is moderately deep to limestone bedrock.

The Frederick soil makes up about 15 to 25 percent of each mapped area. Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil, to a depth of about 61 inches, is yellowish red silty clay or clay and has yellow mottles. The substratum to a depth of about 70 inches is mottled red, yellow, and gray silty clay.

Permeability of the Frederick soil is moderate, and available water capacity is high. In unlimed areas, reaction of the surface layer and the subsoil is strongly acid or very strongly acid. Surface runoff is very rapid. The plow layer has moderate organic matter content, except in eroded areas. This soil is difficult to till because of the steepness of slopes. The subsoil has moderate shrink-swell potential. The root zone is deep.

Included with the soils in this map unit are small areas of Lowell soils on benches.

The Caneyville and Frederick soils are mainly used as woodland, but some areas are used for pasture. These soils are poorly suited to cultivated crops or hay because of rockiness and steep slopes.

These soils are suited to pasture (fig. 6). Plant species that provide sufficient ground cover should be selected to help control further erosion. Equipment use on these steep slopes and pasture renovation should be kept to the minimum necessary to maintain the desired species. Applying lime and fertilizer, controlling grazing, and

Figure 6.—Pasture on Caneyville-Frederick silt loam, very rocky, 20 to 30 percent slopes.

controlling undesirable vegetation are some of the main management practices.

The Caneyville soil is suited to white oak, black oak, Virginia pine, and loblolly pine. The Frederick soil is well suited to eastern white pine, yellow-poplar, northern red oak, Virginia pine, black pine, and white oak. The hazard of erosion, equipment limitations, and plant competition are management concerns.

These soils are poorly suited to urban uses. Steep slopes, rock outcrop, and moderate depth to bedrock are severe limitations for sanitary facilities and building site development.

These soils have been assigned to capability subclass VIs. The Caneyville soil, north aspect, has been assigned to woodland suitability group 3x, and the south aspect has been assigned to woodland suitability group 4x. The Frederick soil has been assigned to woodland suitability group 2c.

CoD—Colyer Variant silt loam, 12 to 30 percent slopes. This shallow, well drained, moderately steep to steep soil is on hillsides. Slopes range from 100 to 200 feet in length. Areas range from 3 to 20 acres.

Typically, the surface layer is brown silt loam about 6 inches thick. The subsoil, to a depth of about 12 inches, is dark yellowish brown silty clay loam. The substratum is dark yellowish brown shaly silty clay loam to a depth of about 18 inches. Below that is black shale.

Permeability is moderate, and available water capacity is low. In unlimed areas, reaction ranges from strongly acid to extremely acid. Surface runoff is rapid. The organic matter content is low. Some areas are difficult to till because of steep slopes and shallowness to shale. The root zone is shallow to black shale.

Included with this soil in mapping are small severely eroded areas. Some included soils have slopes that are more than 30 percent.

Most of the acreage of this Colyer Variant soil is used for pasture. This soil is not suited to cultivated crops and hay because it is steep and it is shallow to shale.

This soil is suited to pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Equipment usage on these steep slopes and pasture renovation should be kept to the minimum necessary to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This Colyer Variant soil is suited to Virginia pine, chestnut oak, shortleaf pine, and eastern white pine. The hazard of erosion, equipment limitation, and seedling mortality are management concerns.

This soil is poorly suited to urban uses. Steep slopes and shallowness to shale are severe limitations for sanitary facilities and building site development.

The Colyer Variant soil has been assigned to capability subclass VIs and woodland suitability group 4d.

DcB—Dickson silt loam, 2 to 6 percent slopes. This deep, moderately well drained, gently sloping fragipan soil is on concave areas around waterways and extends onto and over broad ridgetops. Areas range from 3 to 100 acres.

Typically, the surface layer is brown silt loam about 8 inches thick. The subsoil is yellowish brown silty clay loam to a depth of about 22 inches, and it is yellowish brown silty clay loam with gray silt coats to a depth of about 26 inches. The fragipan, to a depth of about 38 inches, is yellowish brown silty clay loam that is mottled gray. The subsoil to a depth of about 65 inches is mottled yellowish red, yellowish brown, and gray silty clay.

Permeability is moderate above the fragipan and slow or moderately slow in the fragipan. The available water capacity is moderate. In unlimed areas, reaction in the surface layer and subsoil is strongly acid or very strongly acid. Surface runoff is medium. The plow layer has moderate organic matter content and good tilth. Depth to the seasonal high water table ranges from 2 to 3 feet.

Included with this soil in mapping are areas of somewhat poorly drained Taft and Newark soils that are in and adjacent to waterways. Also included are areas in which the clayey residuum is much deeper than typical for the Dickson soil. Some slopes are less than 2 percent. The included soils make up about 20 to 30 percent of a mapped area.

Most of the acreage of this Dickson soil is used for cultivated crops (fig. 7) and hay and pasture. This soil is well suited to all locally grown cultivated crops except tobacco, which is affected by wetness in some areas. This soil is somewhat slow to dry out and warm up in the spring, which causes delays in farm operations. Erosion is a moderate hazard if cultivated crops are grown. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion. Good tilth is easily maintained by returning crop residue to the soil.

Figure 7.—Corn on Dickson silt loam, 2 to 6 percent slopes.

The Dickson soil is well suited to all locally grown hay and pasture plants except alfalfa, which is affected by wetness in some areas. Plant species that produce adequate forage and provide good ground cover should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to loblolly pine, shortleaf pine, black oak, white oak, yellow-poplar, and eastern white pine. Plant competition is a management concern.

The Dickson soil is suited to urban uses; however, the slow or moderately slow permeability of the subsoil is a limitation for sanitary facilities. Wetness is also a limitation for sanitary facilities and building site developments.

This soil has been assigned to capability subclass IIe and woodland suitability group 3o.

ElB—Elk silt loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on stream terraces. Areas range from 3 to 20 acres.

Typically, the surface layer is brown silt loam about 10 inches thick. The subsoil, to a depth of about 40 inches, is dark brown silty clay loam. The substratum to a depth of about 65 inches is yellowish brown silty clay loam.

Permeability is moderate, and available water capacity is high. Reaction ranges from medium acid to very strongly acid, except where the soil has been limed. Surface runoff is medium. This soil is subject to rare flooding. The plow layer has moderate organic matter content and is easy to till. The root zone is deep.

Included with this soil in mapping are small areas of Otwell soils. Also included are areas that are not subject to flooding.

Most of the acreage of this Elk soil is used for cultivated crops and hay and pasture. This soil is well suited to all locally grown cultivated crops, but it has a moderate hazard of erosion. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This soil is well suited to all hay and pasture crops commonly grown in the area. Plant species that produce adequate forage and provide good ground cover should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

The Elk soil is well suited to eastern white pine, yellow-poplar, black walnut, loblolly pine, and black oak. Plant competition is a management concern.

This soil has severe limitations for buildings because of flooding, and it has moderate limitations for sanitary facilities. Areas of this soil that do not flood are suited to most urban uses. Low strength is a limitation for local roads and streets.

This soil has been assigned to capability subclass IIe and woodland suitability group 2o.

ElC—Elk silt loam, 6 to 12 percent slopes. This deep, well drained, sloping soil is on stream terraces. Areas range from 3 to 10 acres.

Typically, the surface layer is brown silt loam about 10 inches thick. The subsoil, to a depth of about 40 inches, is brown silty clay loam. The substratum to a depth of about 65 inches is yellowish brown silty clay loam.

Permeability is moderate, and available water capacity is high. Reaction ranges from medium acid to very strongly acid, except where the soil has been limed. Surface runoff is rapid. This soil is subject to rare flooding. The plow layer has moderate organic matter content and good tilth. The root zone is deep.

Included with this soil in mapping are some areas that have slopes of more than 12 percent. Also included are areas that are not subject to flooding.

Most of the acreage of this Elk soil is used for cultivated crops and hay and pasture. This soil is suited to all locally grown cultivated crops, but it has a severe hazard of erosion. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This soil is well suited to hay and pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

The Elk soil is well suited to eastern white pine, yellow-poplar, black walnut, black oak, and loblolly pine. Plant competition is a management concern.

Rare flooding is a limitation for most urban uses. Steepness of slope is a limitation for sanitary facilities and building site developments. Low strength is a limitation for local roads and streets. Areas of this soil that do not flood are suited to most urban uses.

This soil has been assigned to capability subclass IIIe and woodland suitability group 2o.

FkB—Frankstown silt loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on convex ridgetops. Areas range from 3 to 150 acres.

Typically, the surface layer is brown silt loam about 9 inches thick. The subsoil, to a depth of about 15 inches, is yellowish brown silt loam; to a depth of about 34 inches, it is strong brown cherty silty clay loam; and to a depth of about 40 inches, it is mottled yellowish brown and light yellowish brown cherty silty clay loam. The substratum is yellowish brown very cherty silty clay loam to a depth of about 45 inches. Below that is bedrock.

Permeability is moderate, and available water capacity is high. Reaction ranges from medium acid to very strongly acid, except where the soil has been limed. Surface runoff is medium. The plow layer has moderate organic matter content and, except in a few cherty spots, is easy to till. The subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are small areas of Mountview soils.

Most of the acreage of this Frankstown soil is used for cultivated crops and hay and pasture. This soil is well suited to all locally grown cultivated crops, but it has a moderate hazard of erosion. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This soil is well suited to hay and pasture. Plant species that produce adequate forage and provide good ground cover should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

The Frankstown soil is well suited to eastern white pine, yellow-poplar, black oak, Virginia pine, and shortleaf pine. Plant competition is a management concern.

This soil has moderate limitations for most urban uses because of depth to rock and shrink-swell potential.

This soil has been assigned to capability subclass IIe and woodland suitability group 2o.

FkC—Frankstown silt loam, 6 to 12 percent slopes. This deep, well drained, sloping soil is on side slopes of ridges. Areas range from 3 to 150 acres.

Typically, the surface layer is brown silt loam about 9 inches thick. The subsoil, to a depth of about 15 inches, is yellowish brown silt loam; to a depth of about 34 inches, it is strong brown cherty silty clay loam; and to a depth of about 40 inches, it is mottled yellowish brown and light yellowish brown cherty silty clay loam. The substratum to a depth of about 45 inches is yellowish brown very cherty silty clay loam. Below that is bedrock.

Permeability is moderate, and available water capacity is high. Reaction ranges from medium acid to very strongly acid, except where the soil has been limed. Surface runoff is rapid. The plow layer has moderate organic matter content and, except in a few cherty spots, is easy to till. The subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are spots that are more cherty than typical for the Frankstown soil. Also included are areas in which bedrock is at a depth of less than 40 inches.

Most of the acreage of this Frankstown soil is used for cultivated crops and hay and pasture. This soil is suited to all locally grown cultivated crops, but it has a severe hazard of erosion. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This soil is well suited to hay and pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

The Frankstown soil is well suited to eastern white pine, yellow-poplar, black oak, Virginia pine, and shortleaf pine. Plant competition is a management concern.

This soil is suited to urban uses, but slope, depth to rock, and shrink-swell potential are limitations for sanitary facilities and building site developments.

This soil has been assigned to capability subclass IIIe and woodland suitability group 2o.

FkD—Frankstown silt loam, 12 to 20 percent slopes. This deep, well drained, moderately steep soil is on side slopes of ridges. Areas range from 3 to 200 acres.

Typically, the surface layer is brown silt loam about 9 inches thick. The subsoil, to a depth of about 15 inches, is yellowish brown silt loam; to a depth of about 34 inches, it is strong brown cherty silty clay loam; and to a depth of about 40 inches, it is mottled yellowish brown and light yellowish brown cherty silty clay loam. The substratum to a depth of about 45 inches is yellowish brown very cherty silty clay loam. Below that is bedrock.

Permeability is moderate, and available water capacity is high. Reaction ranges from medium acid to very strongly acid, except where the soil has been limed. Surface runoff is rapid. The plow layer has moderate organic matter content, except in eroded areas. Some small cherty areas are difficult to till. The subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are spots that are more cherty than typical for the Frankstown soil. Some eroded spots and areas are less than 40 inches deep to bedrock. Included soils make up 30 to 40 percent of a mapped area.

Most of the acreage of this Frankstown soil is used for hay and pasture, but some areas are used for cultivated crops in a regular rotation. A few areas are wooded. This soil is suited to occasional cultivation in a long rotation, but it has a very severe hazard of erosion. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This Frankstown soil is well suited to hay and pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture

renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to eastern white pine, yellow-poplar, black oak, Virginia pine, and shortleaf pine. Equipment limitations, the hazard of erosion, and plant competition are management concerns.

The Frankstown soil is poorly suited to most urban uses because of moderately steep slopes.

This soil has been assigned to capability subclass IVe and woodland suitability group 2r.

FkE—Frankstown silt loam, 20 to 30 percent slopes. This deep, well drained, steep soil is on side slopes. Areas range from 3 to 250 acres.

Typically, the surface layer is brown silt loam about 9 inches thick. The subsoil, to a depth of about 15 inches, is yellowish brown silt loam; to a depth of about 34 inches, it is strong brown cherty silty clay loam; and to a depth of about 40 inches, it is mottled yellowish brown and light yellowish brown cherty silty clay loam. The substratum to a depth of about 45 inches is yellowish brown very cherty silty clay loam. Below that is bedrock.

Permeability is moderate, and available water capacity is high. Reaction ranges from medium acid to very strongly acid, except where the soil has been limed. Surface runoff is very rapid. The plow layer has moderate organic matter content; however, in eroded areas it has low organic matter content. Some small cherty areas are difficult to till. The subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are spots that are more cherty than typical for the Frankstown soil. Some eroded spots and areas are less than 40 inches deep to bedrock. Included soils make up 30 to 40 percent of a mapped area.

Most of the acreage of this Frankstown soil is used for pasture (fig. 8), and the rest is wooded. This soil is not suited to cultivated crops because of the hazard of erosion and the difficulty of using machinery on the steep slopes. This soil is suited to pasture and hay, but steep slopes are a limitation for using harvesting equipment. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to eastern white pine, yellow-poplar, black oak, Virginia pine, and shortleaf pine. Equipment limitations, the hazard of erosion, and plant competition are management concerns.

The Frankstown soil is poorly suited to urban uses because of steep slopes.

This soil has been assigned to capability subclass VIe and woodland suitability group 2r.

FrB—Frederick silt loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on convex ridgetops (fig. 9). Areas range from 3 to 10 acres.

Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil, to a depth of about 61 inches, is yellowish red silty clay or clay and has yellow mottles. The substratum to a depth of 70 inches is mottled red, yellow, and gray silty clay.

Permeability is moderate, and available water capacity is high. Reaction is strongly acid or very strongly acid, except where the soil has been limed. Surface runoff is medium. The plow layer has moderate organic matter content and is easy to till. The subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are small areas of Mountview soils.

Most of the acreage of this Frederick soil is used for cultivated crops and hay and pasture. This soil is well suited to all locally grown cultivated crops, but it has a moderate hazard of erosion. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This Frederick soil is well suited to all hay and pasture crops commonly grown in the area. Plant species that produce adequate forage and provide good ground cover should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to eastern white pine, yellow-poplar, northern red oak, Virginia pine, and white oak. Plant competition and equipment limitations are management concerns.

The Frederick soil is suited to most urban uses, but the clayey subsoil and shrink-swell potential are moderate limitations for sanitary facilities and building site developments.

This soil has been assigned to capability subclass IIe and woodland suitability group 2c.

FrC—Frederick silt loam, 6 to 12 percent slopes. This deep, well drained, sloping soil is on side slopes (fig. 9) and a karst landscape. Areas range from 3 to 200 acres.

Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil, to a depth of about 61 inches, is yellowish red silty clay or clay and has yellow mottles. The substratum to a depth of about 70 inches is mottled red, yellow, and gray silty clay.

Permeability is moderate, and available water capacity is high. Reaction is strongly acid or very strongly acid, except where the soil has been limed. Surface runoff is rapid. The plow layer has moderate organic matter

Figure 8.—Pasture on Frankstown silt loam, 20 to 30 percent slopes.

content and is easy to till. The subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are small areas of Mountview soils and areas that are more cherty than typical for the Frederick soil.

Most of the acreage of this Frederick soil is used for cultivated crops and hay and pasture. This soil is suited to all locally grown cultivated crops, but it has a severe hazard of erosion. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This soil is well suited to hay and pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This Frederick soil is well suited to eastern white pine, yellow-poplar, northern red oak, Virginia pine, and white oak. Plant competition and equipment limitations are management concerns.

The Frederick soil is suited to most urban uses, but

Figure 9.—A road cut in Frederick silt loam. Note the chert fragments in the soil.

slope, the clayey subsoil, and shrink-swell potential are moderate limitations for sanitary facilities and building site developments.

This soil has been assigned to capability subclass IIIe and woodland suitability group 2c.

FrD—Frederick silt loam, 12 to 20 percent slopes. This deep, well drained, moderately steep soil is on side slopes (fig. 9) and a karst landscape. Areas range from 3 to 400 acres.

Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil, to a depth of about 61 inches, is yellowish red silty clay or clay that has yellow mottles. The substratum to a depth of about 70 inches is mottled red, yellow, and gray silty clay.

Permeability is moderate, and available water capacity is high. Reaction is strongly acid or very strongly acid, except where the soil has been limed. Surface runoff is rapid. The plow layer has moderate organic matter content, but in eroded areas it is low. Some small areas are cherty and difficult to till. The subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are areas of Needmore soils and soils that have a yellowish brown subsoil instead of red. Also included are areas that are more cherty than typical for the Frederick soil. A few severely eroded areas and small rocky areas are also included.

Most of the acreage of this Frederick soil is used for hay and pasture (fig. 10), but some areas are used for cultivated crops. A few areas are wooded. This soil is suited to occasional cultivation in a long rotation, but it has a very severe hazard of erosion. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

The Frederick soil is well suited to hay and pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to eastern white pine, northern red oak, white oak, Virginia pine, and yellow-poplar. The hazard of erosion, equipment limitations, and plant competition are management concerns.

The Frederick soil is poorly suited to urban uses because of moderately steep slopes. It has severe limitations for sanitary facilities and building site developments.

This soil has been assigned to capability subclass IVe and woodland suitability group 2c.

FrE—Frederick silt loam, 20 to 30 percent slopes. This deep, well drained, steep soil is on side slopes. Areas range from 3 to 100 acres.

Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil, to a depth of about 61 inches, is yellowish red silty clay or clay and has yellow mottles. The substratum to a depth of about 70 inches is mottled red, yellow, and gray silty clay.

Permeability is moderate, and available water capacity is high. Reaction is strongly acid or very strongly acid. Surface runoff is very rapid. The plow layer has moderate organic matter content, but in eroded areas it has low organic matter content. In places the surface layer is cherty and difficult to till. The subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are areas of Needmore soils and areas that are more cherty than typical for the Frederick soil. Also included are severely eroded areas and small rocky areas.

The majority of the acreage of this Frederick soil is

Figure 10.—The Frederick soils in the background are in capability subclass IVe. They are used for pasture. Hay in the foreground is on land in capability subclass IIe.

used for pasture, and the rest is wooded. This soil is not suited to cultivated crops because of the hazard of erosion and the difficulty of using machinery on the steep slopes.

This soil is suited to pasture and hay, but the steep slopes are a limitation for using harvesting equipment. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

The Frederick soil is well suited to eastern white pine, black oak, northern red oak, Virginia pine, and yellow-poplar. The hazard of erosion, equipment limitations, and plant competition are management concerns.

This soil is poorly suited to urban uses. The steep slopes are a severe limitation for sanitary facilities and building site developments.

This soil has been assigned to capability subclass VIe and woodland suitability group 2c.

FsD3—Frederick silty clay loam, 12 to 20 percent slopes, severely eroded. This deep, well drained, moderately steep soil is on side slopes and a karst landscape. In most places the surface layer has been removed by erosion. Areas range from 3 to 200 acres.

Typically, the plow layer is yellowish red silty clay loam about 7 inches thick. The subsoil, to a depth of about 55 inches, is yellowish red silty clay or clay and has yellow mottles. The substratum to a depth of 64 inches is mottled red, yellow, and gray silty clay.

Permeability is moderate, and available water capacity is high. Reaction is strongly acid or very strongly acid,

except where the soil has been limed. Surface runoff is rapid. The plow layer is mostly subsoil material and is low in organic matter content. If tilled when too wet, the soil dries to a hard and cloddy consistency, making it difficult to prepare a good seed bed. In places, the surface is cherty enough to hinder tillage. Shrink-swell potential is moderate. The root zone is deep.

Included with this soil in mapping are areas that have slopes of as much as 30 percent. Some mapped areas include as much as 25 percent Needmore soils. Some soils that have a yellowish brown subsoil are included. Also included are areas that are more cherty than typical for the Frederick soil. A few areas that are not eroded and rocky areas are also included.

Most of the acreage of this Frederick soil is used for hay and pasture, but areas are used occasionally for cultivated crops. A few areas remain idle. This soil is poorly suited to cultivated crops because of the risk of further erosion and low crop yields.

This Frederick soil is suited to hay and pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to eastern white pine, black oak, northern red oak, Virginia pine, and yellow-poplar. The hazard of erosion, equipment limitations, and plant competition are management concerns.

The Frederick soil is poorly suited to urban uses because of moderately steep slopes. It has severe limitations for sanitary facilities and building site developments.

This soil has been assigned to capability subclass VIe and woodland suitability group 2c.

FvE—Frederick-Nolichucky complex, 20 to 30 percent slopes. This complex consists of areas of Frederick and Nolichucky soils. These soils are so intermingled that it was not practical to map them separately. They are deep, well drained, and steep and are on side slopes. Slopes are mostly smooth. Areas range from 5 to 600 acres.

The Frederick soil makes up about 35 to 50 percent of each mapped area. Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil, to a depth of about 61 inches, is yellowish red silty clay or clay and has yellow mottles. The substratum to a depth of about 70 inches is mottled red, yellow, and gray silty clay.

Permeability of the Frederick soil is moderate, and available water capacity is high. Reaction is strongly acid or very strongly acid. Surface runoff is very rapid. The surface layer has moderate organic matter content. Some areas are so cherty that they hinder tillage. The lower part of the subsoil has moderate shrink-swell potential. The root zone is deep.

The Nolichucky soil makes up about 25 to 35 percent of each mapped area. Typically, the surface layer is brown loam about 8 inches thick. The subsoil, to a depth of about 50 inches, is yellowish red clay loam. To a depth of about 75 inches, it is yellowish red silty clay.

Permeability of the Nolichucky soil is moderate, and the available water capacity is high. Reaction is strongly acid or very strongly acid. Surface runoff is very rapid. The surface layer has moderate organic matter content. The root zone is deep.

Included with this complex are severely eroded areas and a few areas that have slopes of less than 20 percent. Also included are very sandy spots and cherty areas that make up 15 to 55 percent of a mapped area.

The soils in this complex are mostly wooded, but a few areas are used for pasture. These soils are not suited to cultivated crops because of the hazard of erosion and the difficulty of using machinery on the steep slopes. The soils are suited to hay, but steep slopes are a limitation for the use of harvesting equipment.

The Frederick and Nolichucky soils are suited to pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

The Frederick soil is well suited to eastern white pine, black oak, northern red oak, white oak, Virginia pine, and yellow-poplar. The Nolichucky soil is well suited to shortleaf pine, loblolly pine, black walnut, yellow-poplar, and eastern white pine. The hazard of erosion, equipment limitations, and plant competition are management concerns.

The soils in this complex are poorly suited to urban uses because of steep slopes. They have severe limitations for sanitary facilities and building site developments.

These soils have been assigned to capability subclass VIe. The Frederick soil has been assigned to woodland suitability group 2c, and the Nolichucky soil has been assigned to woodland suitability group 2r.

GaF—Garmon-Shelocta complex, 25 to 60 percent slopes. This complex consists of narrow bands of Garmon and Shelocta soils on side slopes. These bands of soils are so narrow that it was not practical to map them separately. The soils are well drained and steep to very steep. The Garmon soil is moderately deep and is on the upper slopes, and the Shelocta soil is deep and is on the lower slopes. Slopes are mostly smooth, and areas range from 5 to 1,600 acres.

The Garmon soil makes up about 40 to 75 percent of each mapped area. Typically, the surface layer is brown silt loam about 2 inches thick. The subsurface layer is light yellowish brown silt loam about 3 inches thick. The

subsoil to a depth of 14 inches is light yellowish brown silt loam. To a depth of about 29 inches it is light yellowish brown channery silt loam. Bedrock is at a depth of 29 inches.

Permeability of the Garmon soil is moderately rapid, and available water capacity is low. In unlimed areas, reaction in the surface layer ranges from very strongly acid to neutral. Reaction in the subsoil ranges from medium acid to neutral. Surface runoff is rapid. The surface layer has moderate organic matter content, but it is very difficult to till because of the very steep slopes. The root zone is moderately deep.

The Shelocta soil makes up about 25 to 50 percent of each mapped area. Typically, the surface layer is brown silt loam about 4 inches thick. The subsoil, to a depth of 44 inches, is yellowish brown gravelly silt loam or yellowish brown silty clay loam. To a depth of 64 inches, it is brownish yellow silty clay loam. The subsoil to a depth of 80 inches is mottled yellowish brown and light olive gray silty clay.

Permeability of the Shelocta soil is moderate, and available water capacity is high. Reaction in the subsoil is strongly acid or very strongly acid. Surface runoff is rapid. The surface layer has moderate organic matter content, but it is very difficult to till because of the very steep slopes. The root zone is deep.

Included with the soils in this complex are small areas that are less than 20 inches deep to bedrock.

Most areas of the Garmon and Shelocta soils are wooded. These soils are not suited to cultivated crops or hay and pasture because the slopes are too steep.

The Garmon soil is suited to yellow-poplar, Virginia pine, black oak, white oak, loblolly pine, and eastern white pine. The Shelocta soil is suited to eastern white pine, yellow-poplar, black walnut, and Virginia pine on north slopes and to eastern white pine, Virginia pine, white oak, and shortleaf pine on south slopes. The hazard of erosion and equipment limitations are management concerns because of the very steep slopes. Plant competition is also a management concern.

These soils are poorly suited to all urban uses because of the very steep slopes.

The soils in this complex have been assigned to capability subclass VIIe. The Garmon soil has been assigned to woodland suitability group 3r. The Shelocta soil has been assigned to woodland suitability group 2r, north aspect, and woodland suitability group 3r, south aspect.

LoF—Lowell-Caneyville silt loams, very rocky, 30 to 60 percent slopes. This map unit consists of areas of Lowell and Caneyville soils. These soils are so intermingled that it was not practical to map them separately. The Lowell soil is deep, well drained, and very steep. It is on side slopes with the Caneyville soil, which is moderately deep, well drained, very steep, and rocky. Slopes range from 200 to 500 feet long. Areas range from 3 to 50 acres.

The Lowell soil makes up about 50 to 60 percent of each mapped area. Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsoil to a depth of about 34 inches is reddish brown silty clay loam. To a depth of about 58 inches it is red silty clay. Below that is limestone bedrock.

Permeability of the Lowell soil is moderate or moderately slow, and available water capacity is high. Reaction ranges from medium acid to mildly alkaline. Surface runoff is rapid. The surface layer has high organic matter content but is very difficult to till because of the very steep slopes. The subsoil has moderate shrink-swell potential. The root zone is deep.

The Caneyville soil makes up about 20 to 50 percent of each mapped area. Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil to a depth of about 12 inches is yellowish red silty clay loam. To a depth of about 22 inches it is red silty clay. The substratum to a depth of about 26 inches is dark red silty clay. Below that is limestone bedrock.

Permeability of the Caneyville soil is moderately slow, and available water capacity is moderate. In unlimed areas, reaction in the upper part of the soil ranges from very strongly acid to neutral; it ranges from medium acid to mildly alkaline in the lower part. Surface runoff is rapid. The surface layer has moderate organic matter content but is very difficult to till because of the very steep slopes. About 3 to 15 percent of this soil is covered by limestone rock, which outcrops at random on the surface. The subsoil has moderate shrink-swell potential. The root zone is moderately deep to limestone bedrock.

Included with these soils in mapping are small areas of Frederick soils.

Most areas of the Lowell and Caneyville soils are wooded. These soils are not suited to cultivated crops or hay and pasture because the slopes are too steep and rocky.

The Lowell soil is suited to yellow-poplar, eastern white pine, black oak, white ash, Virginia pine, and loblolly pine. The Caneyville soil is suited to white oak, black oak, Virginia pine, and loblolly pine. The hazard of erosion, equipment limitations, and plant competition are management concerns.

These soils are poorly suited to all urban uses because of the very steep slopes and rock outcrops and the moderate depth to bedrock of the Caneyville soil.

These soils have been assigned to capability subclass VIIs. The Lowell soil has been assigned to woodland suitability group 2c. The Caneyville soil, north aspect, has been assigned to woodland suitability group 3x, and the south aspect has been assigned to woodland suitability group 4x.

Me—Melvin silt loam. This deep, nearly level, poorly drained soil is on flood plains along streams and in depressions on uplands. Slopes range from 0 to 2 percent. Areas range from 3 to 50 acres.

Typically, the surface layer is light brownish gray silt loam about 10 inches thick. The subsoil, to a depth of about 36 inches, is gray silt loam and has yellowish brown mottles. The substratum to a depth of about 65 inches is gray silt loam and has yellowish brown mottles.

Permeability is moderate, and available water capacity is high. In unlimed areas, reaction ranges from medium acid to neutral. Surface runoff is very slow, and occasional flooding occurs in winter or early in spring but rarely during summer. The plow layer has low organic matter content. Tilth is good if excessive moisture is not a hindrance. Depth to the seasonal high water table ranges from 0 to 1 foot.

Included with this soil in mapping are small areas of Newark soils. Also included are spots in which the depth to bedrock is less than 60 inches.

Most of the acreage of this Melvin soil is used for cultivated crops and hay and pasture. This soil is poorly suited to cultivated crops if it is not drained. If drained, it is well suited to corn, soybeans, and wheat. Any crop could be damaged, however, by a rare summer flood. For this reason, tobacco is seldom grown on this soil even if drained. Tile drainage is commonly used to overcome the wetness limitation.

The hazard of erosion is slight, and the Melvin soil can be tilled year after year if it is properly fertilized and if measures are taken to maintain the organic matter content. Minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, help to maintain desirable soil structure and organic matter.

If adequately drained, this soil is well suited to pasture and hay. Plant species that tolerate wetness should be selected. Some hay plants are damaged by flooding. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is suited to pin oak, American sycamore, sweetgum, and loblolly pine. The management concerns are equipment limitations, seedling mortality, and plant competition.

The Melvin soil is poorly suited to urban uses because of wetness and flooding. This soil has been assigned to capability subclass IIIw and woodland suitability group 1w.

MgB—Monongahela silt loam, 2 to 6 percent slopes. This deep, moderately well drained, gently sloping fragipan soil is on broad colluvial areas above flood plains. Areas range from 3 to 225 acres.

Typically, the surface layer is brown silt loam about 9 inches thick. The subsoil to a depth of about 20 inches is yellowish brown silt loam. To a depth of about 28 inches it is yellowish brown gravelly silt loam and has gray mottles. The fragipan, to a depth of about 38 inches, is light yellowish brown silt loam and has grayish mottles; to a depth of about 58 inches, it is reddish yellow silty clay loam and has grayish mottles; and to a depth of about 96 inches, it is mottled reddish yellow, reddish brown, light brownish gray, and light yellowish brown silt loam.

Permeability is moderate above the fragipan and slow or moderately slow in the fragipan. The available water capacity is moderate. In unlimed areas, reaction in the surface layer and subsoil is strongly acid or very strongly acid. Surface runoff is medium. The plow layer has moderate organic matter content and good tilth. Depth to the seasonal high water table ranges from 1.5 to 3 feet.

Included with this soil in mapping are areas of somewhat poorly drained Tyler and Newark soils that are in and adjacent to waterways. Also included are soils that have more clay in the substratum.

Most of the acreage of this Monongahela soil is used for cultivated crops and hay and pasture. This soil is well suited to all locally grown cultivated crops, except tobacco, which is affected by wetness in some years. The soil is somewhat slow to dry out and warm up in spring, which causes delays in farm operations. Erosion is a moderate hazard if cultivated crops are grown. Contour tillage, minimum tillage, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion. Good tilth is easily maintained by returning crop residue to the soil.

This Monongahela soil is well suited to all locally grown hay and pasture plants except alfalfa, which is affected by wetness in most areas. Plant species that produce adequate forage and provide good ground cover should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to eastern white pine, loblolly pine, Virginia pine, yellow-poplar, and black oak. Plant competition is a management concern.

The Monongahela soil is suited to urban uses, but slow permeability and wetness are limitations for sanitary facilities and building site developments.

This soil has been assigned to capability subclass IIe and woodland suitability group 3o.

Mh—Morehead silt loam. This deep, nearly level to gently sloping, somewhat poorly drained and moderately well drained soil is on low terraces that are rarely flooded. Slopes range from 0 to 4 percent. Areas range from 3 to 150 acres.

Typically, the surface layer is dark grayish brown silt loam about 10 inches thick. The subsoil to a depth of

about 27 inches is light yellowish brown silt loam and has light gray mottles. To a depth of about 52 inches it is yellowish brown silt loam and has mottles in shades of gray. The substratum to a depth of about 60 inches is mottled yellowish brown and gray silt loam.

Permeability is moderate, and available water capacity is high. In unlimed areas, reaction in the surface layer and subsoil is strongly acid or very strongly acid. Surface runoff is slow. The plow layer has moderate organic matter content. Tilth is good if excess moisture is not a hindrance. Depth to the seasonal high water table ranges from 0.5 foot to 1.5 feet.

Included with this soil in mapping are areas of Newark and Bonnie soils.

Most of the acreage of this Morehead soil is used for cultivated crops and hay and pasture. The hazard of erosion is slight. This soil is suited to most cultivated crops if drained. Tobacco is damaged by wetness in places. Tile drainage is the system commonly used to overcome the wetness limitation. Minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, help to maintain desirable soil structure and organic matter content.

This Morehead soil is suited to most locally grown hay and pasture plants that can tolerate some wetness. Alfalfa is affected by wetness. Adequate drainage increases the forage yield and permits a wider selection of species and better use of farm machinery. Plant species that produce adequate forage should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to shortleaf pine, yellow-poplar, Virginia pine, sweetgum, pin oak, and eastern white pine. Plant competition and equipment limitations are management concerns.

The Morehead soil is poorly suited to urban uses because of wetness and flooding.

This soil has been assigned to capability subclass IIw and woodland suitability group 2w.

MoB—Mountview silt loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is on convex ridges and in areas of karst. Areas range from 3 to 400 acres.

Typically, the surface layer is dark yellowish brown silt loam about 9 inches thick. The upper part of the subsoil, to a depth of about 37 inches, is strong brown silty clay loam. The lower part of the subsoil, to a depth of about 70 inches, is red clay.

Permeability is moderate, and available water capacity is high. Reaction is strongly acid or very strongly acid, except where the soil has been limed. Surface runoff is medium. The plow layer has moderate organic matter content and is easy to till. The lower part of the subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are small areas of Dickson soils and areas that are more cherty than typical for the Mountview soil. Areas are also included that do not have a subsoil that is red and clayey in the lower part. The included soils make up about 20 to 30 percent of a mapped area.

Most of the acreage of this Mountview soil is used for cultivated crops and hay and pasture (fig. 11). This soil is well suited to all locally grown cultivated crops; however, the hazard of erosion is moderate. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This Mountview soil is well suited to all hay and pasture plants commonly grown in the area. Plant species that produce adequate forage and provide good ground cover should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to shortleaf pine, loblolly pine, yellow-poplar, black walnut, white oak, black oak, and Virginia pine. Plant competition is a management concern.

The Mountview soil is suited to most urban uses, but the clayey lower part of the subsoil and shrink-swell potential are moderate limitations for sanitary facilities and building site developments.

This soil has been assigned to capability subclass IIe and woodland suitability group 2o.

MoC—Mountview silt loam, 6 to 12 percent slopes. This deep, well drained, sloping soil is on side slopes. Areas range from 3 to 20 acres.

Typically, the surface layer is dark yellowish brown silt loam about 9 inches thick. The upper part of the subsoil, to a depth of about 37 inches, is strong brown silty clay loam. The lower part of the subsoil, to a depth of about 70 inches, is red clay.

Permeability is moderate, and available water capacity is high. Reaction is strongly acid or very strongly acid, except where the soil has been limed. Surface runoff is medium. The plow layer has moderate organic matter content and is easy to till. The lower part of the subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are small areas of Frederick soils and areas that are more cherty than typical for the Mountview soil.

Most of the acreage of this Mountview soil is used for cultivated crops and hay and pasture. This soil is suited to all locally grown cultivated crops; however, the hazard

Figure 11.—No-till soybeans following wheat in Mountview silt loam, 2 to 6 percent slopes.

of erosion is severe. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This Mountview soil is well suited to hay and pasture. Plant species that produce adequate forage and provide good ground cover should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to shortleaf pine, loblolly pine, yellow-poplar, black walnut, white oak, black oak, and Virginia pine. Plant competition is a management concern.

The Mountview soil is suited to most urban uses; however, slope and the clayey lower part of the subsoil are limitations for sanitary facilities and building site developments.

This soil has been assigned to capability subclass IIIe and woodland suitability group 2o.

NdC—Needmore silty clay, 6 to 12 percent slopes, severely eroded. This moderately deep, well drained soil is mostly on smooth side slopes. In most places, the original surface layer has been lost by erosion. Areas range from 3 to 10 acres.

Typically, the surface layer is strong brown silty clay about 7 inches thick. The subsoil, to a depth of about 18 inches, is strong brown silty clay. To a depth of about 24 inches, it is yellowish brown silty clay and has pale brown mottles. Below that is calcareous shale.

Permeability is moderately slow, and available water capacity is moderate. Reaction in the upper part of the profile ranges from very strongly acid to slightly acid, except in those layers at or near the surface that have been limed. Reaction in the lower part of the subsoil ranges from very strongly acid to medium acid. Surface runoff is medium. The plow layer is mostly subsoil material and is low in organic matter content. If tilled when it is too wet, the plow layer dries to a hard and cloddy consistency, making it difficult to prepare a good seed bed. Shrink-swell potential is moderate. The root zone is moderately deep.

Included with this soil in mapping are some areas of Frederick soils and some areas that are not eroded. Also included are areas that have slopes of as much as 20 percent.

Most of the acreage of this Needmore soil is used for hay and pasture, but some areas are in brush. This soil is not suited to cultivated crops because of the risk of further erosion and the low crop yields.

This soil is suited to hay and pasture. Plant species that provide sufficient ground cover should be selected

to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

The Needmore soil is suited to loblolly pine, Virginia pine, and eastern redcedar. Equipment limitations and seedling mortality are management concerns.

This soil is poorly suited to urban uses because of depth to rock, slope, and shrink-swell potential.

This soil has been assigned to capability subclass VIe and woodland suitability group 4c.

Ne—Newark silt loam. This deep, nearly level, somewhat poorly drained soil is on flood plains along streams and in karst depressions on uplands. Slopes range from uniform to slightly concave and from 0 to 2 percent. Areas range from 3 to 300 acres.

Typically, the surface layer is dark grayish brown silt loam about 9 inches thick. The subsoil, to a depth of about 28 inches, is grayish brown and gray silt loam and has yellowish brown mottles. The substratum to a depth of 60 inches is gray silty clay loam and has yellowish brown mottles.

Permeability is moderate, and available water capacity is high. Reaction ranges from medium acid to neutral. Surface runoff is very slow. Occasional flooding occurs in winter or early in spring but rarely during summer. The plow layer has moderate organic matter content. Tilth is good if excess moisture is not a hindrance. Depth to the seasonal high water table ranges from 0.5 foot to 1.5 feet.

Included with this soil in mapping are some areas that are more gravelly than typical for the Newark soil. Also included are spots in which depth to bedrock is less than 60 inches.

Most of the acreage of this Newark soil is used for cultivated crops and hay and pasture. This soil is suited to cultivated crops, such as corn, soybeans, and wheat; however, the crops are sometimes damaged by flooding or wetness. Tobacco is seldom grown even if this soil has been drained. Cultivated crops are suited even though the soil is not artificially drained. Good yields are more likely and the soil can be tilled more quickly after it rains if tile drainage is installed. The hazard of erosion is slight, and this soil can be tilled year after year if it is properly fertilized and if measures are taken to maintain organic matter content. Minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, help to maintain desirable soil structure and organic matter content.

This Newark soil is well suited to pasture and hay plants that tolerate some wetness. Some hay plants are damaged by flooding. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is suited to eastern cottonwood, sweetgum, loblolly pine, red maple, American sycamore, eastern white pine, and yellow-poplar. The management concerns are equipment limitations and plant competition.

The Newark soil is poorly suited to urban uses because of wetness and flooding.

This soil has been assigned to capability subclass IIw and woodland suitability group 1w.

NhD—Nolichucky loam, 12 to 20 percent slopes. This deep, well drained, moderately steep soil is on side slopes. Areas range from 3 to 40 acres.

Typically, the surface layer is brown loam about 8 inches thick. The subsoil to a depth of about 50 inches is yellowish red clay loam. To a depth of about 75 inches it is yellowish red silty clay.

Permeability is moderate, and available water capacity is high. Reaction is strongly acid or very strongly acid, except where the soil has been limed. Surface runoff is rapid. The plow layer has moderate organic matter content, except in eroded areas. The lower part of the subsoil has moderate shrink-swell potential. The root zone is deep.

Included with this soil in mapping are areas of Frederick soils and areas that are severely eroded.

Most of the acreage of this Nolichucky soil is wooded but a few areas are used for pasture. This soil is suited to occasional cultivation; however, the hazard of erosion is very severe. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This Nolichucky soil is well suited to hay and pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to shortleaf pine, loblolly pine, yellow-poplar, northern red oak, black walnut, and eastern white pine. Plant competition, equipment limitations, and the hazard of erosion are management concerns.

The Nolichucky soil is poorly suited to urban uses, because of moderately steep slopes.

This soil has been assigned to capability subclass IVe and woodland suitability group 2o.

No—Nolin silt loam. This deep, nearly level, well drained soil is on flood plains along streams and in karst depressions on uplands. Slopes range from uniform to slightly concave and from 0 to 2 percent. Areas range from 3 to 700 acres.

Typically, the surface layer is brown silt loam about 10 inches thick. The subsoil, to a depth of about 42 inches, is brown silt loam. The substratum to a depth of about 65 inches is brown silt loam and has light brownish gray mottles.

Permeability is moderate, and available water capacity is high. Reaction ranges from medium acid to neutral. Surface runoff is slow, and occasional flooding occurs in winter or early in spring but seldom during the growing season. The plow layer has moderate organic matter content and is very easy to till. Depth to the seasonal high water table ranges from 3 to 6 feet.

Included with this soil in mapping are some areas that are more sandy than typical for the Nolin soil. Also included are spots in which the depth to bedrock is less than 60 inches.

Most of the acreage of this Nolin soil is used for cultivated crops (fig. 12). This soil is well suited to cultivated crops, such as corn, soybeans, and wheat. These crops are occasionally damaged, however, by flooding. Valuable crops, such as tobacco, are not usually grown on this soil. The hazard of erosion is slight, and this soil can be tilled year after year if properly fertilized and if measures are taken to maintain the organic matter content. Minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, help to maintain desirable soil structure and organic matter content.

This Nolin soil is well suited to pasture and hay. Some hay plants are damaged by flooding. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management concerns.

This soil is suited to sweetgum, yellow-poplar, eastern white pine, eastern cottonwood, white ash, black walnut, and cherrybark oak. Plant competition is a management concern.

The Nolin soil is poorly suited to urban uses because of flooding.

This soil has been assigned to capability subclass IIw and woodland suitability group 1o.

Figure 12.—Corn can be grown every year on Nolin silt loam.

OtA—Otwell silt loam, 0 to 2 percent slopes. This deep, moderately well drained, nearly level fragipan soil is on stream terraces. Areas range from 3 to 50 acres.

Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil to a depth of about 13 inches is yellowish brown silt loam. To a depth of about 20 inches it is yellowish brown silty clay loam. The fragipan, to a depth of about 56 inches, is yellowish brown silty clay loam and has light gray mottles. The subsoil to a depth of about 75 inches is light gray gravelly silty clay loam and has yellowish brown mottles.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Surface runoff is slow. The plow layer has moderate organic matter content and good tilth. Depth to the seasonal high water table ranges from 1.5 to 2.5 feet.

Included with this soil in mapping are small areas of the somewhat poorly drained to moderately well drained Morehead soils and the well drained Elk soils. The included soils make up about 15 percent of a mapped area. Also included are areas in which bedrock is at a depth of less than 60 inches.

Most of the acreage of this Otwell soil is used for cultivated crops and hay and pasture. This soil is well suited to all locally grown cultivated crops, except tobacco, which is affected by wetness. The soil is somewhat slow to dry out and warm up in spring, causing delays in farm operations. The hazard of erosion is slight. Minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, help to maintain desirable soil structure and organic matter content. Good tilth is easily maintained by returning crop residue to the soil.

The Otwell soil is well suited to all locally grown hay and pasture plants except alfalfa, which is affected by wetness. Plant species that produce adequate forage and provide good ground cover should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to eastern white pine, yellow-poplar, black oak, white oak, and white ash. Plant competition is a management concern.

The Otwell soil is suited to urban uses, but slow permeability and wetness are limitations for sanitary facilities and building site developments.

This soil has been assigned to capability subclass IIw and woodland suitability group 3o.

OtB—Otwell silt loam, 2 to 6 percent slopes. This deep, moderately well drained, gently sloping fragipan soil is on stream terraces. Areas range from about 3 to 50 acres.

Typically, the surface layer is brown silt loam about 7 inches thick. The subsoil to a depth of about 13 inches is yellowish brown silt loam. To a depth of about 20 inches it is yellowish brown silty clay loam. The fragipan, to a depth of about 56 inches, is yellowish brown silty clay loam and has light gray mottles. The subsoil to a depth of about 75 inches is light gray gravelly silty clay loam and has yellowish brown mottles.

Permeability is moderate above the fragipan and very slow in the fragipan. The available water capacity is moderate. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Surface runoff is medium. The plow layer has moderate organic matter content and good tilth. Depth to the seasonal high water table ranges from 1.5 to 2.5 feet.

Included with this soil in mapping are small areas of the somewhat poorly drained to moderately well drained Morehead soils and well drained Elk soils. The included soils make up about 15 to 25 percent of a mapped area.

Most of the acreage of this Otwell soil is used for cultivated crops and hay and pasture. This soil is well suited to all locally grown cultivated crops except tobacco, which is affected by wetness in some areas. The soil is somewhat slow to dry out and warm up in spring, causing delays in farm operations. The hazard of erosion is moderate if cultivated crops are grown. Contour tillage, minimum tillage, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion. Good tilth is easily maintained by returning crop residue to the soil.

This Otwell soil is well suited to all locally grown hay and pasture plants except alfalfa, which is affected by wetness in some areas. Plant species that produce adequate forage and provide good ground cover should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to eastern white pine, yellow-poplar, black oak, white oak, and white ash. Plant competition is a management concern.

The Otwell soil is suited to urban uses but slow permeabilty and wetness are limitations for sanitary facilities and building site developments.

This soil has been assigned to capability subclass IIe, and woodland suitability group 3o.

Pt—Pits. This map unit consists of open excavations from which the soil has been removed and the limestone rock exposed so that it can be mined, conditioned, and stored for agricultural and industrial purposes. The rock or other material that is exposed after mining supports few or no plants. The excavations are as much as 100 feet deep and as much as several hundred feet in diameter. The conditioning areas contain machinery for

crushing the rock into different sizes. The crushed rock is sorted and stored by mesh size. Areas are about 60 acres.

Pits are in the same position on the landscape as Frederick soils.

These areas are poorly suited to any agricultural or urban uses. Selected spots within the areas are suited to loblolly pine.

This miscellaneous area has not been assigned to a capability subclass or a woodland suitability group.

ReC—Riney loam, 6 to 12 percent slopes. This deep, well drained soil is on ridgetops. Areas range from 3 to 350 acres.

Typically, the surface layer is brown loam about 8 inches thick. The subsoil to a depth of about 28 inches is yellowish red clay loam. To a depth of about 50 inches it is yellowish red sandy clay loam. Below that is soft sandstone.

Permeability is moderately rapid, and available water capacity is high. In unlimed areas, reaction in the surface layer and the subsoil is strongly acid or very strongly acid. Surface runoff is medium. The plow layer has moderate organic matter content and is easy to till. The root zone is deep.

Included with this soil in mapping are areas of Frederick and Nolichucky soils and areas that are less than 48 inches deep to sandstone bedrock.

Most of the acreage of this Riney soil is wooded, but some areas are used for hay and pasture and cultivated crops. This soil is suited to all locally grown cultivated crops, but the hazard of erosion is severe. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This Riney soil is well suited to hay and pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetaton are some of the main management practices.

This soil is well suited to yellow-poplar, shortleaf pine, loblolly pine, black walnut, white ash, northern red oak, and eastern white pine. Plant competition is a management concern.

The Riney soil is suited to urban uses, but depth to rock, slope, and seepage are limitations for sanitary facilities. Slope is a limitation for building site developments.

This soil has been assigned to capability subclass IIIe and woodland suitability group 2o.

ReD—Riney loam, 12 to 20 percent slopes. This deep, well drained, moderately steep soil is on ridgetops. Areas range from 3 to 25 acres.

Typically, the surface layer is brown loam about 8 inches thick. The subsoil to a depth of about 28 inches is yellowish red clay loam. To a depth of about 50 inches it is yellowish red sandy clay loam. Below that is soft sandstone.

Permeability is moderately rapid, and available water capacity is high. In unlimed areas, reaction in the surface layer and the subsoil is strongly acid or very strongly acid. Surface runoff is rapid. The plow layer has moderate organic matter content and is easy to till. The root zone is deep.

Included with this soil in mapping are areas of Frederick and Nolichucky soils and areas that are less than 48 inches deep to sandstone bedrock.

Most of the acreage of this Riney soil is wooded, but some areas are used for hay and pasture and cultivated crops. This soil is suited to occasional cultivation; however, the hazard of erosion is very severe. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This Riney soil is well suited to hay and pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to yellow-poplar, shortleaf pine, loblolly pine, black walnut, white ash, northern red oak, and eastern white pine. Plant competition is a management concern.

The Riney soil is poorly suited to urban uses because of moderately steep slopes.

This soil has been assigned to capability subclass IVe and woodland suitability group 2o.

Se—Sensabaugh gravelly silt loam. This deep, nearly level to gently sloping, well drained gravelly soil is on flood plains along streams. Slopes range from 0 to 8 percent. Areas range from 3 to 450 acres.

Typically, the surface layer is brown gravelly silt loam about 10 inches thick. The subsoil, to a depth of about 32 inches, is brown gravelly silt loam. The substratum to a depth of about 60 inches is brown very gravelly silt loam.

Permeability is moderate or moderately rapid, and available water capacity is moderate. Reaction ranges from medium acid to neutral. Surface runoff is slow, and occasional flooding occurs in winter or early in spring but seldom during the growing season. The plow layer has moderate organic matter content. The gravel hinders tillage. Depth to the seasonal high water table ranges from 4 to 6 feet.

Included with this soil in mapping are areas of Newark and Nolin soils.

Most of the acreage of this Sensabaugh soil is used for cultivated crops. This soil is suited to crops, such as corn, soybeans, and wheat; however, crops are occasionally damaged by flooding. Valuable crops, such as tobacco, are not usually grown on this soil. Minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, help to maintain desirable soil structure and organic matter content.

This Sensabaugh soil is well suited to pasture and hay. Some hay plants are damaged by flooding. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is suited to yellow-poplar, black walnut, white ash, black oak, white oak, and loblolly pine. Plant competition is a management concern.

The Sensabaugh soil is poorly suited to urban uses because of flooding.

This soil has been assigned to capability subclass IIs and woodland suitability group 2o.

ShB—Shelocta silt loam, 2 to 6 percent slopes. This deep, well drained, gently sloping soil is in colluvial positions on side slopes. Areas range from 3 to 50 acres.

Typically, the surface layer is yellowish brown silt loam about 4 inches thick. The subsoil to a depth of about 44 inches is yellowish brown gravelly silt loam or silty clay loam. To a depth of about 80 inches it is brownish yellow silty clay loam and has light brownish gray and strong brown mottles, grading to yellowish brown and light olive gray silty clay at a depth of 64 inches.

Permeability is moderate, and available water capacity is high. Reaction of the subsoil is strongly acid or very strongly acid. Surface runoff is medium. The plow layer has moderate organic matter content and is easy to till. The root zone is deep.

Included with this soil in mapping are small areas of Monongahela soils.

Most of the acreage of this Shelocta soil is used for cultivated crops and hay and pasture. This soil is well suited to all locally grown cultivated crops, but the hazard of erosion is moderate. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This Shelocta soil is well suited to all hay and pasture crops commonly grown in the area. Plant species that produce adequate forage and provide good ground cover should be selected. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to eastern white pine, yellow-poplar, black walnut, northern red oak, and Virginia pine. Plant competition is a management concern.

The Shelocta soil is suited to most urban uses, but seepage is a limitation for sanitary facilities.

This soil has been assigned to capability subclass IIe and woodland suitability group 2o.

ShC—Shelocta silt loam, 6 to 12 percent slopes. This deep, well drained soil is in colluvial positions on side slopes. Areas range from 3 to 60 acres.

Typically, the surface layer is brown silt loam about 4 inches thick. The subsoil to a depth of 44 inches is yellowish brown gravelly silt loam or silty clay loam. To a depth of about 80 inches it is brownish yellow silty clay loam and has light brownish gray and strong brown mottles, grading to yellowish brown and light olive gray silty clay at a depth of 64 inches.

Permeability is moderate, and available water capacity is high. Reaction of the subsoil is strongly acid or very strongly acid. Surface runoff is rapid. The plow layer has moderate organic matter content and is easy to till. The root zone is deep.

Included with this soil in mapping are small areas that are less gravelly in the subsoil than typical for the Shelocta soil.

Most of the acreage of this Shelocta soil is used for cultivated crops and hay and pasture. This soil is suited to all locally grown cultivated crops, but the hazard of erosion is severe. Contour tillage, minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, slow runoff and help to control erosion.

This Shelocta soil is well suited to all hay and pasture crops commonly grown in the area. Plant species that provide sufficient ground cover should be selected to help control further erosion. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to eastern white pine, yellow-poplar, black walnut, northern red oak, and Virginia pine. Plant competition is a management concern.

The Shelocta soil is suited to most urban uses. Seepage and slope are limitations for sanitary facilities. Slope is a limitation for building site development.

This soil has been assigned to capability subclass IIIe and woodland suitability group 2o.

SlD—Shelocta-Lenberg complex, 12 to 30 percent slopes. This complex consists of areas of Shelocta and Lenberg soils. These soils are so intermingled that it was impractical to map them separately. The Shelocta soil is deep, well drained, and silty. It is in colluvial positions on side slopes. The Lenberg soil is a moderately deep, well

drained, clayey residual soil that is on side slopes. Areas range from 3 to 950 acres.

The Shelocta soil makes up about 40 to 75 percent of each mapped area. Typically, the surface layer is brown silt loam about 4 inches thick. The subsoil to a depth of about 44 inches is yellowish brown gravelly silt loam or silty clay loam. To a depth of about 80 inches it is brownish yellow silty clay loam and has light brownish gray and strong brown mottles, grading to yellowish brown and light olive silty clay at a depth of 64 inches.

Permeability of the Shelocta soil is moderate, and available water capacity is high. Reaction in the subsoil is strongly acid or very strongly acid. Surface runoff is rapid or very rapid. The surface layer has moderate organic matter content. Some areas are difficult to till because of steep slopes, and gravel in places hinders tillage. The root zone is deep.

The Lenberg soil makes up about 25 to 50 percent of each mapped area. Typically, the surface layer is grayish brown silt loam about 10 inches thick. The subsoil to a depth of about 20 inches is yellowish brown gravelly silty clay loam. To a depth of about 36 inches it is yellowish brown silty clay and has gray mottles. Below that is soft grayish brown shale.

Permeability of the Lenberg soil is moderately slow, and available water capacity is moderate. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Surface runoff is rapid. The surface layer has moderate organic matter content. Some areas are difficult to till because of steep slopes, and gravel in places hinders tillage. The root zone is moderately deep.

Included with this complex are severely eroded areas of the Shelocta and Lenberg soils.

Most of the acreage of the Shelocta and Lenberg soils is wooded, and the rest is used for pasture. These soils are not suited to cultivated crops or hay because of the steepness of slopes and the very severe hazard of erosion.

These soils are suited to pasture. Plant species that provide sufficient ground cover should be selected to help control further erosion. On the steep soils, equipment use and pasture renovation should be kept to the minimum necessary to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

The Shelocta soil is well suited to eastern white pine, yellow-poplar, black walnut, northern red oak, and Virginia pine. The Lenberg soil is suited to eastern white pine, shortleaf pine, Virginia pine, black oak, white oak, and loblolly pine. The hazard of erosion, equipment limitations, and plant competition are management concerns.

The soils in this complex are poorly suited to urban uses because of steep slopes or the clayey subsoil.

These soils have been assigned to capability subclass VIe. The Shelocta soil has been assigned to woodland suitability group 2r, and the Lenberg soil has been assigned to woodland suitability group 3c.

Ta—Taft silt loam. This deep, nearly level, somewhat poorly drained fragipan soil is in concave areas around waterways and in depressional areas on uplands. Slopes range from 0 to 2 percent. Areas range from 3 to 90 acres.

Typically, the surface layer is grayish brown silt loam about 10 inches thick. The subsoil, to a depth of about 24 inches, is pale brown silt loam and has gray mottles. The fragipan to a depth of about 40 inches is pale brown silty clay loam and has light gray and strong brown mottles. To a depth of 60 inches it is mottled light gray and strong brown silty clay loam.

Permeability is moderate above the fragipan and slow in the fragipan. The available water capacity is moderate. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Surface runoff is very slow. The plow layer has moderate organic matter content. Tilth is good if excess moisture is not a hindrance. Depth to the seasonal high water table ranges from 1 to 2 feet.

Included with this soil in mapping are areas of a poorly drained soil that is similar to Bonnie soils.

Most of the acreage of this Taft soil is used for cultivated crops and hay and pasture, although some areas are wooded. This soil is suited to cultivated crops, such as corn, soybeans, and wheat; however, tobacco is seldom grown because of wetness. Cultivated crops are suited even though the soil is not artificially drained; however, yields are higher and the soil can be tilled more quickly after it rains if it has been drained. Minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, help to maintain desirable soil structure and organic matter content.

This Taft soil is well suited to pasture and hay plants that can tolerate wetness. Most hay plants are suited to this soil except alfalfa, which has a short life because of wetness and the fragipan. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling, grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to loblolly pine, sweetgum, yellow-poplar, and white ash. The management concerns are equipment limitations and plant competition.

The Taft soil is poorly suited to urban uses. Wetness and slow permeability are severe limitations.

This soil has been assigned to capability subclass IIIw and woodland suitability group 2w.

Ty—Tyler silt loam. This deep, nearly level, somewhat poorly drained fragipan soil is in concave areas and around waterways. Slopes range from 0 to 2 percent. Areas range from 3 to 125 acres.

Typically, the surface layer is grayish brown silt loam about 4 inches thick. The subsurface layer, to a depth of about 9 inches, is light brownish gray silt loam. The subsoil, to a depth of about 20 inches, is pale brown silt loam and has gray mottles. The fragipan, to a depth of about 38 inches, is gray silty clay loam and has brownish yellow mottles. To a depth of about 64 inches it is brownish yellow silt loam and has gray mottles.

Permeability is moderate above the fragipan and slow in the fragipan. The available water capacity is moderate. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Surface runoff is very slow. The plow layer has moderate organic matter content. Tilth is good if excess moisture is not a hindrance. Depth to the seasonal high water table ranges from 0.5 foot to 2 feet.

Included with this soil in mapping are small areas of Monongahela soils.

Most of the acreage of this Tyler soil is used for cultivated crops and hay and pasture. This soil is suited to cultivated crops, such as corn, soybeans, and wheat; however, tobacco is seldom grown because of wetness. Cultivated crops are suited even though the soil is not artificially drained; however, yields are higher and the soil can be tilled more quickly after it rains if it has been drained. Minimum tillage, returning crop residue to the soil, and the use of cover crops, including grasses and legumes in the cropping system, help to maintain desirable soil structure and organic matter content.

This Tyler soil is well suited to pasture and hay plants that can tolerate some wetness. Most hay plants are suited to this soil except alfalfa, which has a short life because of wetness and the fragipan. Pasture renovation should be frequent enough to maintain the desired species. Applying lime and fertilizer, controlling grazing, and controlling undesirable vegetation are some of the main management practices.

This soil is well suited to white ash, yellow-poplar, loblolly pine, and sweetgum. The management concerns are equipment limitations and plant competition.

The Tyler soil is poorly suited to urban uses. Wetness and slow permeability are severe limitations.

This soil has been assigned to capability subclass IIIw and woodland suitability group 2w.

prime farmland

Prime farmland is one of several kinds of important farmlands defined by the U.S. Department of Agriculture. It is of major importance in providing the Nation's short- and long-range needs for food and fiber. The supply of high quality farmland is limited and the U.S. Department of Agriculture recognizes that all levels of government, as well as individuals, must encourage and facilitate the use of our Nation's prime farmland with wisdom and foresight.

Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. Prime farmland produces the highest yields with minimal inputs of energy and money, and farming it results in the least damage to the environment.

Prime farmland must either be used for producing food or fiber or be available for these uses. It may now be in crops, pasture, woodland, or other land, but not urban or built-up land or water areas. Urban and built-up land is any contiguous area of 10 or more acres that is used for residences, industrial sites, commercial sites, construction sites, institutional sites, public administrative sites, railroad yards, small parks, cemeteries, airports, golf courses, spillways, shooting ranges, or similar uses.

Prime farmland usually has an adequate and dependable supply of moisture from precipitation or irrigation. It has favorable temperature, growing season, and soil reaction. It has few or no rocks and is permeable to water and air. Prime farmland is not excessively erodible or saturated with water for long periods and is not flooded during the growing season. The slope ranges mainly from 0 to 6 percent. For more detailed information on the criteria for prime farmland, consult the local staff of the Soil Conservation Service.

About 47,850 acres, or 26 percent, of Green County and about 55,605 acres, or 31 percent, of Taylor County meet the soil requirements of prime farmland. Areas are scattered throughout the county, but most are in general soil map units 2 and 3 in Green County and 2, 3, and 5 in Taylor County.

Detailed soil map units that make up prime farmland in Green and Taylor Counties are listed in this section. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps in the back of this publication. The soil qualities that affect use and management are described in the section "Detailed soil maps units."

Soils that have limitations—a high water table, flooding, or inadequate rainfall—may qualify as prime farmland if these limitations are overcome by such measures as drainage, flood control, or irrigation. In the following list, measures needed to overcome these limitations, if any, are shown in parentheses after the map unit name. Onsite evaluation is necessary to see if the limitations have been overcome by corrective measures.

The map units that meet the soil requirements for prime farmland are:

Bo	Bonnie silt loam, terrace (if artificially drained)
DcB	Dickson silt loam, 2 to 6 percent slopes
ElB	Elk silt loam, 2 to 6 percent slopes
FkB	Frankstown silt loam, 2 to 6 percent slopes
FrB	Frederick silt loam, 2 to 6 percent slopes

Me	Melvin silt loam (if protected from flooding and if artificially drained)
MgB	Monongahela silt loam, 2 to 6 percent slopes
Mh	Morehead silt loam
MoB	Mountview silt loam, 2 to 6 percent slopes
Ne	Newark silt loam (if protected from flooding and if artificially drained)
No	Nolin silt loam (if protected from flooding)
OtA	Otwell silt loam, 0 to 2 percent slopes
OtB	Otwell silt loam, 2 to 6 percent slopes
Se	Sensabaugh gravelly silt loam (if protected from flooding)
ShB	Shelocta silt loam, 2 to 6 percent slopes
Ta	Taft silt loam (if artificially drained)
Ty	Tyler silt loam (if artificially drained)

use and management of the soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

crops and pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed soil map units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

The soils in Green and Taylor Counties have good potential for increased food production. Some land is idle, some is in woods, and some is in pasture that is potentially good cropland. In addition to the reserve production capacity represented by this land, food production could be increased considerably by extending the latest crop production technology to all cropland in the survey area. This soil survey can help facilitate the application of such technology.

Soil erosion is the major concern on sloping cropland and pastureland in the survey area. If soil slope is more than 2 percent, erosion is a hazard. In general, the greater the slope, the greater the hazard and the more difficult it is to control soil erosion.

Loss of the surface layer through erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, such as Frederick and Caneyville soils, and on soils that have a layer in the subsoil that limits the depth of the root zone. Such layers include a fragipan, as in Dickson soils, or bedrock, as in Caneyville soils. Second, soil erosion results in sedimentation of streams. Control of erosion minimizes the pollution of streams by sediment and improves the quality of water for municipal use, for recreation, and for fish and wildlife.

Erosion control practices provide a protective surface cover, reduce runoff, and increase infiltration. A cropping system that keeps a vegetative cover on the soil for extended periods can hold soil erosion losses to amounts that will not reduce the productive capacity of the soils. On livestock farms, which require pasture and hay, the legume and grass forage crops in the cropping system reduce erosion on sloping land, provide nitrogen, and improve tilth for the following crop.

Minimum tillage and a cropping system that produces substantial vegetative cover are both needed on sloping soils if contour farming is not used. Minimizing tillage and leaving crop residue on the surface help to increase infiltration and reduce the hazards of runoff and erosion.

Corn, which is commonly produced using no-tillage (fig. 13), is effective in reducing erosion on sloping land. The acreage planted by this method is increasing.

A combination of no-tillage, minimum tillage, contouring, contour stripcropping, or terracing helps to keep soil loss at a minimum. The local technician of the Soil Conservation Service can furnish information on erosion control systems that will keep soil loss to a minimum.

Soil drainage is the major management need of the wet lands of the survey area. Production on all the somewhat poorly drained soils, such as Newark silt loam, and the poorly drained soils, such as Melvin silt loam, can be increased by designed drainage systems.

The design of surface and subsurface drainage systems varies with the kind of soil. A combination of surface drainage and tile drainage is needed in most wet soils used for intensive row cropping. Drains have to be more closely spaced in slowly permeable soils than in more permeable soils. Finding adequate outlets for tile drainage systems is difficult in many areas of Newark and Melvin soils. The local technician of the Soil Conservation Service can help land users with the survey, design, and installation of a drainage system.

All the soils in Green and Taylor Counties respond to the application of lime and fertilizer. If they have never been limed, applications of ground limestone are required to raise the pH level sufficiently for good growth of alfalfa and other crops that grow only on nearly neutral soils. Available phosphorus and potash levels are naturally low in all of the soils. Additions of lime and fertilizer should be based on the results of soil tests, on the need of the crop, and on the expected level of yields. The Cooperative Extension Service can help in

Figure 13.—Herbicide application and sod planting of corn on Mountview silt loam, 2 to 6 percent slopes.

determining the kinds and amounts of fertilizer and lime to apply.

Soil tilth is an important factor in the germination of seeds and in the infiltration of water in the soil. Soils with good tilth are granular and porous.

The soils used for crops in the survey area have a surface layer of silt loam that is light in color and moderate in content of organic matter. Generally, the structure of such soils is weak, and intense rainfall causes the formation of a crust on the surface. The crust is hard when dry and tends to be impervious to water. Once the crusts forms, it reduces infiltration and increases runoff. Regular additions of crop residue, manure, and other organic material helps to improve soil structure and reduces crust formation. These materials, when left on the soil surface, provide the best known protection against the damaging impact of raindrops.

Fall plowing is generally not a good practice on sloping soils because of the damaging erosion that occurs during winter and spring.

Field crops suited to the soils and climate of the survey area include corn, soybeans, and tobacco. Grain sorghum, sunflowers, peanuts, potatoes, and similar crops can be grown if economic conditions are favorable.

Wheat, oats, and barley are common close-growing crops. Rye and buckwheat can be grown, and grass seed can be produced from fescue, orchardgrass, and bluegrass if economics are favorable.

Specialty crops grown commercially in the survey area are vegetables, small fruits, tree fruits, and nursery plants. A small acreage throughout the survey area is used for melons, strawberries, sweet corn, tomatoes, peppers, cucumbers, and other vegetables and small fruits. In addition, large areas can be adapted to other specialty crops, such as blueberries, grapes, and many vegetables. Apples are the most important tree fruit in the survey area. Soils in low positions, where frost is frequent and air drainage is poor, are poorly suited to early vegetables, small fruits, and orchards. Peaches bloom early in the spring, and, in most cases, the blooms are killed by frost late in spring.

Latest information and suggestions for growing specialty crops can be obtained from local offices of the Cooperative Extension Service.

yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs (*10*).

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 or IIIe-6.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Detailed soil map units."

woodland management and productivity

Charles A. Foster, forester, Soil Conservation Service, assisted in preparing this section.

Taylor and Green Counties are in the western Mesophytic forest region. The oak-hickory forest type occupies 58 percent of the woodland, the maple-beech-birch type makes up 15 percent, and other minor types consisting of hardwoods and pines make up the remaining 27 percent. Woodland occupies 61,100 acres, or 34 percent of the land area, in Green County and 72,900 acres, or 41 percent, in Taylor County.

Woodland tracts in the survey area are small private holdings averaging 23 acres and are essentially unmanaged. Most woodland sites are capable of growing 50 cubic feet or more of wood per acre per year, but actual growth is approximately 38 cubic feet (*6, 7*). Obstacles to woodland management are the lack of interest in, and knowledge of, sound woodland practices. Woodland tracts are not well stocked with desirable high quality trees, and many tracts are owned less than 10 years.

With proper management, tree growth, stocking, and quality can be improved. This involves removal of low quality trees in fully stocked and understocked stands of all sizes and regeneration of sawtimber stands after harvest. Soil surveys are a useful management tool to identify Kentucky's most productive woodland sites, soil limitations for woodland management and tree species to favor or plant.

The wood industry in Green and Taylor Counties consists mainly of ten sawmills and four timber concentration yards. Products or services derived from these facilities include custom sawing, rough lumber, dimension stock, crossties, posts, farm gates and fuelwood. Several mills in adjacent counties also buy logs from the survey area.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: x, w, t, d, c, s, f, and r.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in

management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Ratings of *plant competition* indicate the degree to which undesirable plants are expected to invade where there are openings in the tree canopy. The invading plants compete with native plants or planted seedlings. A rating of *slight* indicates little or no competition from other plants; *moderate* indicates that plant competition is expected to hinder the development of a fully stocked stand of desirable trees; *severe* indicates that plant competition is expected to prevent the establishment of a desirable stand unless the site is intensively prepared, weeded, or otherwise managed to control undesirable plants.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* (*4*). This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. Site index was determined at 30 years for eastern cottonwood, 35 years for American sycamore, and 50 years for all other species. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suited to the soils and to commercial wood production.

recreation

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Paths and trails for hiking, horseback riding, and bicycling should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the

surface. The suitability of the soil for tees or greens is not considered in rating the soils.

wildlife habitat

The wildlife population of Green and Taylor Counties consists of an estimated 39 species of mammals, 73 species of reptiles and amphibians, and 116 species of breeding birds. Many of the more than 200 other birds that visit Kentucky each year can be found in these counties at some time during the year.

The kinds of wildlife important at present are those that furnish recreation in the form of sport hunting, or economic gain in the form of commercial trapping. In Green and Taylor Counties these are the cottontail rabbit, gray squirrel, fox squirrel, white-tailed deer, raccoon, red fox, mink, muskrat, bobwhite quail, mourning dove, and various species of ducks and geese. Although there is much overlap in the types of habitat required by these animals, the white-tailed deer, gray squirrel, and fox squirrel are thought of as woodland wildlife; the rabbit, quail, and dove as openland wildlife; and ducks, geese, and shore birds, plus such mammals as mink and muskrat which spend much of their time in or about water, as wetland wildlife.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants (*3*).

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, orchardgrass, bluegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, and beggarweed.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, cedar, and hemlock.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control

structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, shore birds, muskrat, mink, and beaver.

engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

building site development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the

year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

sanitary facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the

lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, and soil reaction affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as cover.

construction materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3

feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

water management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; and embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, or organic matter. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan; or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

soil properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 17.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas (*11*). Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

engineering index properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil series and their morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains particles coarser than sand, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as Pt. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 17.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

physical and chemical properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability (*8*) is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

soil and water features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or

soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes are not considered flooding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An artesian water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavations.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

engineering index test data

Table 17 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil series and their morphology." The soil samples were tested by Kentucky Department of Transportation.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO),

D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 423 (ASTM); Plasticity index—T 90 (AASHTO), D 424 (ASTM); Moisture density, Method A—T 99 (AASHTO), D 698 (ASTM); California bearing ratio—T 193 (AASHTO), D 1883 (ASTM).

physical and chemical analyses of selected soils

The results of physical analysis of several typical pedons in the survey area are given in table 18 and the results of chemical analysis in table 19. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil series and their morphology." Soil samples were analyzed by the Kentucky Agricultural Experiment Station.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (*12*).

Coarse materials—(2-75 mm fraction) weight estimates of the percentages of all materials less than 75 mm (3B1).

Sand—(0.05-2.0 mm fraction) weight percentages of materials less than 2 mm (3A1).

Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all materials less than 2 mm (3A1).

Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of materials less than 2 mm (3A1).

Water-retention difference—between 1/10 and 15 bars for less than 2 mm material (4C2).

Organic carbon—dichromate, ferric sulfate titration (6A1a).

Extractable acidity—barium chloride-triethanolamine I (6H1a).

Cation-exchange capacity—ammonium acetate, pH 7.0 (5A1a).

Cation-exchange capacity—sum of cations (5A3a).

Base saturation—ammonium acetate, pH 7.0 (5C1).

Base saturation—sum of cations, TEA, pH 8.2 (5C3).

Reaction (pH)—1:1 water dilution (8C1a).

Reaction (pH)—potassium chloride (8C1c).

Available phosphorus—procedure (656) Kentucky Agricultural Experiment Station.

Field Sampling—site selection (1A1).

Field Sampling—soil sampling (1A2).

Laboratory Preparation—Standard (air dry) Material (1B1).

Particles—specified size > 2mm (2A2).

Particles—T1 < 2mm (2A1).

Particles—greater than 2 mm By Field or Laboratory Weighing (3B1a).

Extractable Bases—(5B1a).

Exchangeable Acidity (H+ A1)—Method of Yuan Procedure 67-3.52, Part 2, Methods of Analysis, ASA, 1965.

Calcium Carbonate Equivalent—Procedure (236b) USDA Handbook 60, USDA Salinity Laboratory 1954 (7N7).

classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*13*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 20, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplaquents (*Hapl*, meaning minimal horizonation, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Haplaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, nonacid, mesic Typic Haplaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

soil series and their morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*9*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*13*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Bonnie series

The Bonnie series consists of deep, poorly drained soils that have moderate or moderately slow permeability. These nearly level soils formed in old alluvium on terrace positions that are generally above flood plains. Slopes range from 0 to 2 percent.

Bonnie soils are in the same position on the landscape as Morehead and Otwell soils. Morehead soils are better drained than Bonnie soils. Otwell soils are better drained and have a fragipan.

Typical pedon of Bonnie silt loam, terrace; in a cultivated field, about 3 miles northeast of Greensburg in the bend of Green River, in Green County:

Ap—0 to 8 inches; grayish brown (2.5Y 5/2) silt loam; many medium distinct dark brown (10YR 4/3) mottles; weak fine granular structure; very friable; many very fine roots; slightly acid; gradual wavy boundary.

B2g—8 to 17 inches; light olive gray (5Y 6/2) silt loam; common medium distinct dark brown (10YR 4/3) mottles; weak fine granular structure; very friable; common very fine roots; strongly acid; gradual wavy boundary.

Cg—17 to 60 inches; light gray (5Y 7/2) silt loam; common medium prominent yellowish brown (10YR 5/6) mottles; massive; very friable; strongly acid.

Solum thickness ranges from 15 to 30 inches. Depth to bedrock is more than 60 inches. Reaction is strongly acid or very strongly acid, unless the soil has been limed.

The Ap horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1, 2, or 3. The Bg and the Cg horizons have hue of 10YR, 2.5Y, or 5Y; value of 6 or 7; and chroma of 1 or 2.

Caneyville series

The Caneyville series consists of moderately deep, well drained soils that have moderately slow permeability. They formed in residuum from limestone. These sloping to very steep soils are on side slopes. Slopes range from 6 to 60 percent but are dominantly 20 to 30 percent.

Caneyville soils are in the same position on the landscape as Mountview, Frederick, and Lowell soils. Mountview soils are on higher convex ridges, are deep to bedrock, and are not red and clayey in the upper part of the subsoil. Frederick soils are above Caneyville soils and are deep to bedrock. Lowell soils are intermingled with Caneyville soils on the very steep slopes, are silty in the upper part of the solum, and are deep to bedrock.

Typical pedon of Caneyville silt loam, in an area of Caneyville-Frederick complex, very rocky, 20 to 30 percent slopes; in an idle field, about 8,200 feet west of Gresham, which is about 5 miles southeast of Greensburg, in Green County:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; common very fine roots; very strongly acid; clear smooth boundary.

B21t—7 to 12 inches; yellowish red (5YR 4/6) silty clay loam; moderate fine and medium subangular blocky structure; friable; few thin clay films; medium acid; gradual wavy boundary.

B22t—12 to 22 inches; red (2.5YR 4/6) silty clay; moderate medium angular blocky structure; firm; thin clay films; medium acid; gradual wavy boundary.

C—22 to 26 inches; dark red (2.5YR 3/6) silty clay; massive; very firm; slightly acid; abrupt wavy boundary.

R—26 inches; hard, gray limestone.

Solum thickness and depth to bedrock range from 20 to 40 inches. Reaction ranges from very strongly acid to neutral in the upper part of the solum and ranges from medium acid to mildly alkaline in the lower part.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3.

In some pedons, the B1t horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6. It is silty clay loam. The B2t horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6. In some pedons there are mottles in shades of brown. The B2t horizon is silty clay, clay, or silty clay loam.

The C horizon is red or brown. In places, it has olive or gray mottles. It is silty clay or clay.

Colyer Variant

The Colyer Variant consists of shallow, well drained soils that have moderate permeability. They formed in residuum from acid black shale. Colyer Variant soils are on short, moderately steep to steep side slopes. Slopes range from 12 to 30 percent.

Colyer Variant soils are in the same position on the landscape as Shelocta and Monongahela soils. Shelocta and Monongahela soils are much deeper than Colyer soils, and Monongahela soils have a fragipan.

Typical pedon of Colyer Variant silt loam, 12 to 30 percent slopes; in a pasture, about 1-1/4 miles northeast of Merrimac, and about 15 miles northeast of Campbellsville, in Taylor County:

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many very fine roots; very strongly acid; clear smooth boundary.

B2—6 to 12 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine roots; extremely acid; clear wavy boundary.

C—12 to 18 inches; dark yellowish brown (10YR 4/4) shaly silty clay loam; massive; friable; 40 percent shale fragments; few very fine roots; extremely acid; abrupt wavy boundary.

R—18 inches; black shale.

Solum thickness and depth to shale range from 8 to 20 inches. Reaction ranges from strongly acid to extremely acid, unless the soil has been limed. Shale fragments make up 0 to 15 percent by volume of the A and B horizons and 0 to 50 percent by volume of the C horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. It is silt loam or silty clay loam and their shaly analogues.

Some pedons do not have a C horizon. The C horizon in some pedons is mottled yellowish red (5YR 4/6), strong brown (7.5YR 5/6), yellowish brown (10YR 5/6), and light gray (10YR 7/2). The C horizon is silty clay loam or shaly silty clay loam.

Dickson series

The Dickson series consists of deep, moderately well drained soils that have a fragipan and slow or moderately slow permeability. The upper 20 to 40 inches of the solum formed in silty material, and the lower part formed in residuum weathered from limestone. These gently sloping soils are on broad ridgetops or in slightly concave valleys. Slopes range from 2 to 6 percent.

Dickson soils are in the same position on the landscape as Mountview, Frederick, and Taft soils. Mountview soils, are on higher and narrower convex ridges, do not have a fragipan, and are well drained. Frederick soils, are on steeper adjacent slopes, are well drained, and have a red clayey subsoil. Taft soils are on more gently sloping adjacent areas and are somewhat poorly drained.

Typical pedon of Dickson silt loam, 2 to 6 percent slopes, in a cultivated field, about 7,600 feet southwest of Summersville on the north side of State Road 323, and about 6 miles northwest of Greensburg, in Green County:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many very fine roots; strongly acid; clear smooth boundary.

B2—8 to 22 inches; yellowish brown (10YR 5/6) silty clay loam; few fine distinct pale brown (10YR 6/3) mottles; moderate fine and medium subangular blocky structure; friable; common, fine roots; strongly acid; clear wavy boundary.

B&A'2—22 to 26 inches; yellowish brown (10YR 5/6) silty clay loam; common fine light brownish gray (10YR 6/2) silt coats; moderate fine and medium subangular blocky structure; friable; few fine roots; very strongly acid; clear wavy boundary.

B'x—26 to 38 inches; yellowish brown (10YR 5/6) silty clay loam; many medium prominent light gray (10YR 7/1) and few fine faint strong brown (7.5YR 5/6) mottles; strong very coarse prismatic structure parting to strong medium and coarse angular blocky; very firm; brittle and compact; few thin clay films; very strongly acid; clear wavy boundary.

IIB2—38 to 65 inches; mottled yellowish red (5YR 5/6), yellowish brown (10YR 5/6), and light gray (10YR 7/1) silty clay; strong medium and fine angular blocky structure; very firm; few thin clay films; very strongly acid.

Solum thickness ranges from 60 to 80 inches. Depth to bedrock is more than 60 inches. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Depth to the fragipan ranges from 24 to 30 inches.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. In some pedons the B1 horizon has hue of 10YR, value of 5, and chroma of 4 or 6. The B1 horizon is silt loam or silty clay loam. The B2 horizon has hue of 10YR, value of 5, and chroma of 4 or 6. In some pedons, it does not have mottles. The B2 horizon is silt loam or silty clay loam.

The B&A'2 horizon has hue of 10YR, value of 5, and chroma of 4 or 6. It is silt loam or silty clay loam. The B'x horizon has hue of 10YR, value of 5, chroma of 4 or 6, and common to many gray, yellow, and brown mottles. It is silty clay loam or silt loam. The IIB2t horizon is mottled in shades of red, brown, and gray. It is silty clay or clay.

The Dickson soils in this survey are taxadjuncts to the series because they have a temperature that is two or three degrees cooler than typical and minor differences in color that are not typical. These differences do not alter their use and management.

Elk series

The Elk series consists of deep, well drained soils that have a brown silty subsoil and moderate permeability. They formed in silty old alluvium on stream terraces. These gently sloping to sloping soils are on stream terraces. Slopes range from 2 to 12 percent but are dominantly 2 to 6 percent.

The Elk soils are in the same position on the landscape as Otwell and Morehead soils. Otwell soils are on adjacent slopes, have a fragipan, and are not as well drained. Morehead soils are on adjacent slopes, are more level, and are moderately well drained to somewhat poorly drained.

Typical pedon of Elk silt loam, 2 to 6 percent slopes; in a cultivated field, about 2,200 feet west of Haskingsville, and about 8 miles southeast of Greensburg, in Green County:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many very fine roots; neutral; clear smooth boundary.

B2t—10 to 40 inches; dark brown (7.5YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; few very fine roots; few faint clay films; strongly acid; gradual wavy boundary.

C—40 to 65 inches; yellowish brown (10YR 5/6) silty clay loam; common fine light yellowish brown (10YR 6/4) mottles; massive; friable; strongly acid.

Solum thickness ranges from 40 to 60 inches. Depth to bedrock is more than 60 inches. Reaction ranges from medium acid to very strongly acid, unless the soil has been limed. The content of pebbles in the lower part of the pedon ranges from 0 to 20 percent.

The Ap horizon has hue of 10YR, value of 4, and chroma of 3 or 4. The B2t horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. Few to common mottles that have chroma of 2 or 3 are in the lower part of some pedons. The B2t horizon is silt loam or silty clay loam. The C horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 6. Mottles are in shades of brown and gray. The C horizon is silt loam or silty clay loam and has 0 to 20 percent pebbles.

Frankstown series

The Frankstown series consists of deep, well drained soils that have moderate permeability and a strong brown or yellowish brown silty subsoil that contains chert. They formed in silty residuum from siltstone and limestone. These gently sloping to steep soils are on ridgetops and side slopes. Slopes range from 2 to 30 percent.

Frankstown soils are in the same position on the landscape as Garmon soils. The Garmon soils are on steeper adjacent slopes, are moderately deep to bedrock, and generally have more chert on the surface.

Typical pedon of Frankstown silt loam, 6 to 12 percent slopes; in a cultivated field, about 10,000 feet south of Merrimac, and about 13 miles northeast of Campbellsville, in Taylor County:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many very fine roots; 5 percent chert fragments; very strongly acid; clear smooth boundary.

B1—9 to 15 inches; yellowish brown (10YR 5/6) silt loam; weak fine subangular blocky structure; friable; common very fine roots; 5 percent chert fragments; very strongly acid; gradual wavy boundary.

B2t—15 to 34 inches; strong brown (7.5YR 5/6) cherty silty clay loam; moderate fine and medium subangular blocky structure; friable; few very fine roots in upper part; 20 percent chert and siltstone fragments; patchy clay films; very strongly acid; gradual wavy boundary.

B3—34 to 40 inches; mottled yellowish brown (10YR 5/6) and light yellowish brown (10YR 6/4) cherty silty clay loam; weak medium subangular blocky structure; friable; 35 percent chert and siltstone fragments; very strongly acid; gradual wavy boundary.

C—40 to 45 inches; yellowish brown (10YR 5/6) very cherty silty clay loam; many fine faint light yellowish brown (10YR 6/4) and few fine distinct gray (10YR 6/1) mottles; massive; friable; 50 percent chert and siltstone fragments; very strongly acid; abrupt wavy boundary.

R—45 inches; siltstone.

Solum thickness ranges from 30 to 60 inches. Depth to bedrock is more than 40 inches. Reaction ranges from medium acid to very strongly acid. The content of coarse fragments ranges from 0 to 15 percent in the Ap and B1 horizons, from 0 to 30 percent in the B2 horizon, and from 20 to 50 percent in the B3 and C horizons. The fragments are chert, siltstone, and sandstone.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The B1 horizon has hue of 10YR, value of 5 or 6, and chroma of 4 or 6. It is silt loam or silty clay loam. The B2t horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. It is silt loam or silty clay loam and their cherty analogues. The B3 and C horizons have hue of 10YR or 7.5YR, value of 5 or 6 and chroma of 4 through 8. Mottles are in shades of brown, gray, and red. The B3 and C horizons are cherty or very cherty silt loam or silty clay loam.

Frederick series

The Frederick series consists of deep, well drained soils that have a moderately permeable, reddish clay subsoil. These soils formed in residuum from limestone. They are gently sloping to steep and are on ridgetops, side slopes, and karst areas. Slopes range from 2 to 30 percent but are dominantly 6 to 20 percent.

Frederick soils are in the same position on the landscape as Mountview, Dickson, Caneyville, and Needmore soils. Mountview soils generally are more gently sloping and have a fine-silty control section. Dickson soils have a fragipan, are moderately well drained, and are more gently sloping. Caneyville soils are moderately deep to bedrock and have rock outcrop on the surface. Needmore soils have a brown subsoil that formed in calcareous shale.

Typical pedon of Frederick silt loam, 12 to 20 percent slopes; in a cultivated field, about 150 yards east of a county road, about 7,000 feet southwest of Saloma, and about 6 miles northwest of Campbellsville, in Taylor County:

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many very fine roots; 8 percent chert fragments by volume; medium acid; abrupt smooth boundary.

B21t—7 to 22 inches; yellowish red (5YR 5/6) silty clay; few fine distinct light yellowish brown (2.5YR 6/4) mottles; moderate medium angular blocky structure; firm; few fine roots; 2 percent chert fragments by volume; thin continuous clay films; medium acid; gradual wavy boundary.
B22t—22 to 54 inches; mottled yellowish red (5YR 5/6) and brownish yellow (10YR 6/8) silty clay; weak and moderate fine and medium angular blocky structure; firm; few fine roots; 5 percent chert fragments by volume; common thin clay films; strongly acid; gradual wavy boundary.
B23t—54 to 61 inches; mottled yellowish red (5YR 5/6), brownish yellow (10YR 6/8), and light gray (10YR 7/1) clay; weak fine angular blocky and some relict platy shale structure; firm; 10 percent chert fragments by volume; common, thin clay films; very strongly acid; gradual wavy boundary.
C—61 to 70 inches; mottled yellowish red (5YR 5/6), brownish yellow (10YR 6/8), and light gray (10YR 7/1) silty clay; relict platy structure; firm; common clay films between plates; 13 percent chert fragments by volume; few black coatings between plates; very strongly acid.

Solum thickness and depth to bedrock are more than 60 inches. Reaction is strongly acid or very strongly acid unless limed. Chert fragments range from 0 to 15 percent throughout the profile.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. In eroded areas, however, it is yellowish red (5YR 5/6) silty clay loam.

Some pedons have a thin B1 horizon that is strong brown (7.5YR 5/6) silty clay loam. The B2t horizon has hue of 5YR or 2.5YR, value of 4 through 6, and chroma of 6 or 8. Some pedons have subhorizons that have hue of 7.5YR. Mottles are in shades of yellow or brown in the upper part, and in shades of gray in the lower part. The B2t horizon is silty clay or clay.

In some pedons there is no C horizon, and the B2t horizon extends to a depth of more than 72 inches.

Garmon series

The Garmon series consists of moderately deep, well drained soils that have moderately rapid permeability. They formed in residuum from siltstone and limestone. Garmon soils are on steep or very steep side slopes. Slopes range from 25 to 60 percent.

Garmon soils are on the landscape between Frankstown soils on higher, more gently sloping areas and Shelocta soils on lower slopes. Frankstown and Shelocta soils are deep to bedrock.

Typical pedon of Garmon silt loam, in an area of Garmon-Shelocta complex, 25 to 60 percent slopes; in a wooded area, about 200 feet east of a county road, about 2 miles south of Merrimac, and about 13 miles northeast of Campbellsville, in Taylor County:

O1—1/2 inch to 0; partially decomposed roots, leaves, and moss.
A1—0 to 2 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure parting to weak very fine granular; very friable; many fine and medium roots; 10 percent thin flat fragments by volume; very strongly acid; clear smooth boundary.
A2—2 to 5 inches; light yellowish brown (10YR 6/4) silt loam; weak fine and medium subangular blocky structure; very friable; few fine pores; 5 percent thin flat fragments by volume; very strongly acid; gradual smooth boundary.
B21—5 to 14 inches; light yellowish brown (10YR 6/4) silt loam; weak medium subangular blocky structure; very friable; common fine roots; few fine pores; 5 percent thin flat fragments by volume; medium acid; gradual wavy boundary.
B22—14 to 29 inches; light yellowish brown (2.5Y 6/4) channery silt loam; weak fine and medium subangular blocky structure; very friable; 15 percent thin flat fragments by volume; medium acid; abrupt smooth boundary.
R—29 inches; siltstone.

Solum thickness and depth to bedrock range from 20 to 40 inches. Coarse fragments range from 5 to 40 percent throughout the profile. Reaction ranges from very strongly acid to neutral.

The A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. It is silt loam or loam and their channery analogues. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. It is silt loam or loam and their channery analogues.

The B2 horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 4 or 6. It is silt loam, loam, or silty clay loam and their channery analogues.

In some pedons, there is a C horizon that has colors and texture similar to those of the B2 horizon. The bedrock is interbedded siltstone and limestone.

Garmon soils in Taylor and Green Counties are taxadjuncts to the series. These soils have 2 to 5 percent less clay than typical; however, this difference does not alter their use and management.

Lenberg series

The Lenberg series consists of moderately deep, well drained soils that have moderately slow permeability. They formed in residuum weathered from clay shale. These moderately steep or steep soils are on side slopes and convex ridges. Slopes range from 12 to 30 percent.

Lenberg soils are in the same position on the landscape as Shelocta soils. Shelocta soils are deep, colluvial soils that have a fine-loamy control section.

Typical pedon of Lenberg silt loam, in an area of Shelocta-Lenberg complex, 12 to 30 percent slopes; about 1-1/2 miles northeast of Merrimac, about 15 miles northeast of Campbellsville, in Taylor County:

Ap—0 to 10 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; very friable; 10 percent pebbles by volume; very strongly acid; clear smooth boundary.

B21t—10 to 20 inches; yellowish brown (10YR 5/4) gravelly silty clay loam; moderate medium subangular blocky structure; friable; 25 percent pebbles by volume; few thin clay films; very strongly acid; gradual wavy boundary.

B22t—20 to 36 inches; yellowish brown (10YR 5/4) silty clay; many medium distinct gray (10YR 6/1) mottles; weak medium subangular blocky structure; firm; few thick clay films; very strongly acid; gradual wavy boundary.

Cr—36 to 60 inches; grayish brown (10YR 5/2) soft shale; very strongly acid.

Solum thickness and depth to soft shale range from 20 to 40 inches. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Pebbles in the solum range from 0 to 30 percent.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The B21t horizon has hue of 10YR, value of 5, and chroma of 4 through 6. It is gravelly silty clay loam or silty clay. The B22t horizon has hue of 10YR, value of 5, and chroma of 4 through 6. Mottles are in shades of gray. The B22t horizon is silty clay or clay or their gravelly analogues.

The bedrock is soft, acid, clayey shale in shades of gray, brown, or olive.

Lowell series

The Lowell series consists of deep, well drained soils that have moderately slow or moderate permeability. The upper part formed in silty colluvium, and the lower part formed in residuum weathered from limestone. These very steep soils are on side slopes adjacent to streams. Slopes range from 30 to 60 percent.

Lowell soils are in the same position on the landscape as Caneyville soils. Caneyville soils are moderately deep to bedrock.

Typical pedon of Lowell silt loam, in an area of Lowell-Caneyville silt loams, very rocky, 30 to 60 percent slopes; in a wooded area, about 7,600 feet south of Summersville, and about 3 miles northwest of Greensburg, in Green County:

A1—0 to 9 inches; dark brown (7.5YR 3/2) silt loam; weak fine granular structure; very friable; common roots; mildly alkaline; clear smooth boundary.

B21t—9 to 34 inches; reddish brown (5YR 4/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; few roots; few thin clay films; mildly alkaline; gradual wavy boundary.

IIB22t—34 to 58 inches; red (2.5YR 4/6) silty clay; moderate fine and medium subangular blocky structure; firm; thin clay films; mildly alkaline; abrupt wavy boundary.

R—58 inches; limestone rock.

Solum thickness and depth to bedrock are more than 40 inches. Reaction ranges from medium acid to mildly alkaline.

The A horizon has hue of 10YR or 7.5YR, value of 3, and chroma of 2 or 3.

In some pedons, there is a B1 horizon that has hue of 7.5YR, value of 4 or 5, and chroma of 4 or 6. It is silt loam or silty clay loam. The B21t horizon has hue of 5YR, value of 4 or 5, and chroma of 4 or 6. The IIB22t horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 or 6. It is silty clay or clay.

In some pedons, there is a C horizon that is gray or olive and is over calcareous shale.

The Lowell soils in this survey are taxadjuncts to the series. The surface layer has value and chroma 1 unit lower, the B horizon has hue 1 unit or 2 units redder, and the upper part of the B horizon has slightly less clay than typical for the series. These differences, however, do not alter their use and management.

Melvin series

The Melvin series consists of deep, poorly drained soils that have moderate permeability. These nearly level soils formed in mixed silty alluvium and are subject to occasional flooding of short duration, mainly in winter and in spring but rarely during summer. Slopes range from 0 to 2 percent.

Melvin soils are in the same position on the landscape as Newark and Nolin soils. Newark soils are better drained and browner in the upper part of the B horizon. Nolin soils are well drained.

Typical pedon of Melvin silt loam; in a cultivated field, about 3,600 feet east of Green River bridge near the American Legion Park, and about 1 mile southeast of Greensburg, in Green County:

Ap—0 to 10 inches; light brownish gray (10YR 6/2) silt loam; weak fine granular structure; very friable; neutral; gradual wavy boundary.

B2g—10 to 36 inches; gray (10YR 6/1) silt loam; common fine distinct yellowish brown (10YR 5/6) mottles; weak fine granular structure; very friable; medium acid; gradual wavy boundary.

Cg—36 to 65 inches; gray (10YR 6/1) silt loam; common fine distinct yellowish brown (10YR 5/6) mottles; massive; very friable; medium acid.

Solum thickness ranges from 20 to 40 inches. Depth to bedrock is more than 60 inches. Reaction ranges from medium acid to neutral, unless the soil has been limed.

The Ap horizon has hue of 2.5Y or 10YR, value of 5 or 6, and chroma of 1 or 2. The B2g horizon has hue of 2.5Y or 10YR, value of 6 or 7, and chroma of 1. Mottles are in shades of brown. The Cg horizon has hue of 2.5Y or 10YR, value of 6 or 7, and chroma of 1. Mottles are in shade of brown. Some pedons have stratified layers of loam and gravel in the lower part of the C horizon.

Monongahela series

The Monongahela series consists of deep, moderately well drained, fragipan soils that have slow or moderately slow permeability. They formed in silty colluvium overlaying residuum, mainly from shale. These gently sloping soils are on broad areas above the flood plains of Robinson Creek and its tributaries. Slopes range from 2 to 6 percent.

Monongahela soils are in the same position on the landscape as Tyler soils. Tyler soils are more poorly drained.

Typical pedon of Monongahela silt loam, 2 to 6 percent slopes; in a cultivated field about 50 yards north of Kentucky Highway 337, 1-1/2 miles northeast of Mannsville, and about 10 miles northeast of Campbellsville, in Taylor County:

Ap—0 to 9 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; 5 percent chert and sandstone pebbles 1/2 inch to 2 inches in diameter; medium acid; abrupt smooth boundary.

B21t—9 to 20 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure parting to weak fine angular blocky; friable; common fine roots; few fine pores; few discontinuous clay films; 5 percent chert and sandstone pebbles 1/2 inch to 2 inches in diameter; very strongly acid; clear smooth boundary.

B22t—20 to 28 inches; yellowish brown (10YR 5/6) gravelly silt loam; few fine faint light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure parting to weak fine angular blocky; firm; few fine roots; few fine pores; common thin pale brown and light brownish gray silt coatings on larger peds and pebbles; few discontinuous clay films on small peds; 25 percent chert and sandstone pebbles; very strongly acid; clear wavy boundary.

Bx1—28 to 38 inches; light yellowish brown (10YR 6/4) silt loam; common medium faint light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) mottles; weak very coarse prismatic structure parting to weak fine and medium angular blocky; very firm and brittle; few fine roots between prisms; few fine pores in prisms; light gray and pale brown silt coats 2 to 5 millimeters thick on prisms; nearly continuous clay films on blocks; 5 percent chert and sandstone pebbles 1/2 inch to 2 inches in diameter; very strongly acid; gradual wavy boundary.

Bx2—38 to 58 inches; reddish yellow (7.5YR 6/6) silty clay loam; few medium distinct light brownish gray (10YR 6/2) and light yellowish brown (10YR 6/4) mottles; moderate very coarse prismatic structure parting to weak fine angular blocky; very firm and brittle; few fine pores in prisms; light gray silt coats 2 to 10 millimeters thick on prisms; many clay films on blocks; 5 percent chert and sandstone pebbles 1/2 inch to 2 inches in diameter; very strongly acid; gradual wavy boundary.

Bx3—58 to 76 inches; reddish yellow (7.5YR 6/6) silt loam; few medium distinct light brownish gray (10YR 6/2) and light yellowish brown (10YR 6/4) mottles; moderate very coarse prismatic structure parting to weak fine angular blocky; very firm and brittle; few fine pores in prisms; light gray silt coats 2 to 20 millimeters thick on prisms; many clay films on blocks; 1 percent chert and sandstone pebbles by volume, 1/2 inch to 2 inches in diameter; very strongly acid; gradual wavy boundary.

Bx4—76 to 96 inches; mottled reddish yellow (7.5YR 6/8), light brownish gray (10YR 6/2), and light yellowish brown (10YR 6/4) silt loam; moderate very coarse prismatic structure; very firm and brittle; few fine roots between prisms; light gray silt coats 5 to 20 millimeters thick; very strongly acid.

Solum thickness ranges from 40 to more than 100 inches. Depth to hard rock is more than 60 inches. Reaction is strongly acid or very strongly acid unless the soil has been limed. Depth to the fragipan ranges from 24 to 30 inches. Coarse fragments, mostly pebbles, range from 0 to 15 percent.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The B2t horizon has hue of 10YR, value of 5, and chroma of 4 through 6. It is silt loam, gravelly silt loam, or silty clay loam. The Bx horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 through 8. Mottles are in shades of gray or brown. The Bx horizon is silt loam or light silty clay loam.

In some pedons there is a IIC clayey horizon below a depth of about 42 inches.

Morehead series

The Morehead series consists of deep, somewhat poorly drained or moderately well drained soils that have moderate permeability. These nearly level to gently sloping soils formed in old silty alluvium on low terraces above flood plains.

Morehead soils are associated with Nolin, Newark, Bonnie, and Otwell soils. Nolin, Newark, and Bonnie soils are on flood plains. Nolin soils are well drained, and Bonnie soils are poorly drained. Otwell soils have a fragipan, and Newark soils have a mottled brown and brownish gray subsoil.

Typical pedon of Morehead silt loam, 0 to 4 percent slopes; in a cultivated field, about 4,400 feet northeast of Mannsville, and about 10 miles northeast of Campbellsville, in Taylor County:

Ap—0 to 10 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; very friable; many very fine roots; strongly acid; clear smooth boundary.

B1—10 to 27 inches; light yellowish brown (10YR 6/4) silt loam; common fine distinct light gray (10YR 7/1) mottles; weak fine subangular blocky structure; friable; few very fine roots; very strongly acid; gradual wavy boundary.

B2t—27 to 52 inches; yellowish brown (10YR 5/4) silt loam; many fine distinct light gray (10YR 7/1) mottles; weak fine subangular blocky structure; friable; few patchy clay films; very strongly acid; gradual wavy boundary.

C—52 to 60 inches; mottled yellowish brown (10YR 5/6) and gray (10YR 6/1) silt loam; massive; friable; very strongly acid.

Solum thickness ranges from 40 to 60 inches. Depth to bedrock is more than 60 inches. Reaction is strongly acid or very strongly acid, unless the soil has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The B horizon has hue of 10YR, value of 5 or 6, and chroma of 4 through 6. Mottles are in shades of gray and brown. The B horizon is silt loam or silty clay loam. The C horizon is in shades of brown or gray. It is silt loam or silty clay loam.

Mountview series

The Mountview series consists of deep, well drained, moderately permeable soils that are strong brown and silty in the upper part of the subsoil and red and clayey in the lower part. About 20 to 36 inches of the upper part of the solum formed in loess, and the lower part formed in residuum weathered from limestone. These gently sloping to sloping soils are on ridgetops, side slopes, and karst areas. Slopes range from 2 to 12 percent.

Mountview soils are in the same position on the landscape as Frederick, Dickson, and Taft soils. Frederick soils are mostly on steeper adjacent slopes and are red and clayey in the upper part of the subsoil. Dickson soils are on more gently sloping adjacent areas, are moderately well drained, and have a fragipan. Taft soils are on more gently sloping adjacent areas, are somewhat poorly drained, and have a fragipan.

Typical pedon of Mountview silt loam, 2 to 6 percent slopes; in a cultivated field, about 6,000 feet southwest of Sand Lick Church, about 3 miles north of Summersville, and about 8 miles northwest of Greensburg, in Green County:

Ap—0 to 9 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; very friable; common fine roots; strongly acid; abrupt smooth boundary.

B21t—9 to 24 inches; strong brown (7.5YR 5/6) silty clay loam; weak fine and medium subangular blocky structure; friable; few fine roots; few fine pores; few thin clay films; very strongly acid; gradual smooth boundary.

B22t—24 to 37 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine pores; thin continuous yellowish red clay films; few thin silt coatings; few small chert fragments; very strongly acid; clear wavy boundary.

IIB23t—37 to 59 inches; red (2.5YR 4/6) clay; moderate medium angular blocky structure parting to moderate very fine angular blocky; firm; few fine pores; thin continuous clay films; common strong brown silt coatings; few sand size chert fragments; very strongly acid; gradual smooth boundary.

IIB24t—59 to 70 inches; red (2.5YR 4/6) clay; moderate medium angular blocky structure parting to moderate fine angular blocky; firm; slightly brittle; few fine pores; thin continuous reddish brown clay films; few thick strong brown clay films on larger peds; very strongly acid.

Solum thickness is more than 60 inches. Depth to limestone bedrock is more than 60 inches. Reaction is strongly acid or very strongly acid in the subsoil.

The Ap horizon has hue of 10YR, value of 4, and chroma of 3 or 4. The B2t horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8. It is silt loam or silty clay loam. In some pedons, the lower part of this horizon is slightly more compact than the upper part. The IIBt horizon has hue of 5YR or 2.5YR; value of 3, 4, or 5; and chroma of 6. Mottles are in shades of brown. The IIBt horizon is silty clay loam, silty clay, or clay.

The Mountview soils in this survey are taxadjuncts to the series because they have a temperature that is two or three degrees cooler than typical. This difference does not alter their use and management.

Needmore series

The Needmore series consists of moderately deep, well drained soils that have moderately slow permeability and a brown clayey subsoil. They formed in residuum from calcareous shale. These sloping soils are on side slopes. Slopes range from 6 to 12 percent.

Needmore soils are in the same position on the landscape as Frederick soils. Frederick soils have a red subsoil and are deeper to bedrock.

Typical pedon of Needmore silty clay, 6 to 12 percent slopes, severely eroded; in a cultivated field, about 7,000 feet southwest of Black Gnat, which is on the Green-Taylor County line on Kentucky Highway 70:

Ap—0 to 7 inches; strong brown (7.5YR 5/6) silty clay; moderate fine and medium subangular blocky structure; firm; mildly alkaline; gradual wavy boundary.

B2t—7 to 18 inches; strong brown (7.5YR 5/6) silty clay; few fine faint light yellowish brown (10YR 6/4) mottles; moderate fine and medium subangular blocky structure; firm; few clay films; medium acid; gradual wavy boundary.

B3—18 to 24 inches; yellowish brown (10YR 5/4) silty clay; few fine faint pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; firm; few clay films; medium acid; abrupt wavy boundary.

Cr—24 inches; soft calcareous shale.

Solum thickness ranges from 20 to 36 inches. Depth to calcareous shale ranges from 20 to 40 inches. The upper part of the pedon ranges from very strongly acid to slightly acid, except in horizons at or near the surface that have been limed. The lower part of the pedon ranges from medium acid to very strongly acid.

The eroded Ap horizon has hue of 7.5YR or 10YR, value of 5, and chroma of 4 through 8. It is silty clay loam or silty clay. The B horizon has hue of 7.5YR or 10YR, value of 5, and chroma of 4 through 8. It is silty clay or clay. Mottles are in shades of yellow or brown.

Newark series

The Newark series consists of deep, somewhat poorly drained flood plain soils that have moderate permeability. The nearly level soils formed in mixed silty alluvium and are subject to occasional floods of short duration, mostly in winter and spring but rarely during summer. Newark soils are along streams and in karst depressions on uplands. Slopes range from 0 to 2 percent.

Newark soils are in the same position on the landscape as Nolin and Melvin soils. Nolin soils are well drained, and Melvin soils are poorly drained.

Typical pedon of Newark silt loam; in a cultivated field, about 3,500 feet northeast of the confluence of Russell Creek and Green River, and about 2 miles south of Greensburg, in Green County:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; very friable; neutral; gradual wavy boundary.

B21—9 to 14 inches; dark grayish brown (10YR 4/2) silt loam; few medium faint dark yellowish brown (10YR 4/4) mottles; weak fine granular structure; very friable; neutral; gradual wavy boundary.

B22g—14 to 28 inches; gray (10YR 5/1) silt loam; many medium distinct yellowish brown (10YR 5/6) mottles; weak fine granular structure; very friable; neutral; gradual wavy boundary.

Cg—28 to 60 inches; gray (10YR 6/1) silty clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; neutral.

Solum thickness ranges from 24 to 40 inches. Depth to bedrock is more than 60 inches. Reaction ranges from medium acid to neutral.

The Ap and B21 horizon has hue of 2.5Y or 10YR, value of 4 or 5, and chroma of 2 or 3. Mottles are in shades of gray or brown.

The B22g and Cg horizons have hue of 2.5Y or 10YR; value of 5,6, or 7; and chroma of 1 or 2. Mottles are in shades of brown. The B22g and Cg horizons are silt loam or silty clay loam.

Nolichucky series

The Nolichucky series consists of deep, well drained soils that have moderate permeability and a reddish clay loam and silty clay loam subsoil. They formed in loamy material that slumped over residuum from limestone. These moderately steep or steep soils are on side slopes. Slopes range from 12 to 30 percent.

Nolichucky soils are only in the northwestern part of Green and Taylor Counties and are in the same position on the landscape as Frederick and Riney soils. Frederick soils are clayey in the upper part of the subsoil. Riney soils contain more sand and are not as deep to bedrock.

Typical pedon of Nolichucky loam, 12 to 20 percent slopes; in a cultivated field, about 600 feet north of Poplar Grove Church, and about 18 miles northwest of Campbellsville, in Taylor County:

Ap—0 to 8 inches; brown (10YR 4/3) loam; weak fine granular structure; very friable; neutral; clear smooth boundary.

B22t—8 to 50 inches; yellowish red (5YR 4/6) clay loam; common fine distinct pale brown (10YR 6/3) mottles; moderate medium subangular blocky structure; friable; few clay films; very strongly acid; gradual wavy boundary.

IIB23t—50 to 75 inches; yellowish red (5YR 5/6) silty clay; few fine distinct yellowish brown (10YR 5/6) and red (2.5YR 4/6) mottles; strong medium subangular blocky structure; firm; thick clay films; very strongly acid.

Solum thickness ranges from 60 to 100 inches. Depth to bedrock is more than 60 inches. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Coarse fragments, mostly quartzite pebbles, make up 0 to 10 percent of the upper part of the solum. The lower part ranges from 0 to 10 percent chert by volume.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 3. It is loam or silt loam. The B2t horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. It is clay loam or sandy clay loam. In some pedons the upper few inches has hue of 7.5YR. The IIBt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. It is silty clay or clay. Mottles are in shades of brown. This horizon is not present in some pedons.

Nolichucky soils in Taylor and Green Counties are considered taxadjuncts to the series. These soils have a IIB horizon below a depth of 50 inches that formed in residuum from limestone. Use and management is not significantly different.

Nolin series

The Nolin series consists of deep, well drained flood plain soils that have moderate permeability. These nearly level soils formed in mixed silty alluvium and are subject to occasional floods of short duration, mostly in winter and spring. Nolin soils are along streams and in karst depressions on uplands. Slopes range from 0 to 2 percent.

Nolin soils are in the same position on the landscape as Newark and Melvin soils. Newark and Melvin soils dominantly have low chroma at a depth of 20 inches.

Typical pedon of Nolin silt loam; in a cultivated field, about 1,700 feet south-southwest of the confluence of Clover Lick Creek and Green River, which is about 1 mile south of Greensburg, in Green County:

Ap—0 to 10 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; neutral; gradual smooth boundary.

B2—10 to 42 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; neutral; gradual wavy boundary.

C—42 to 65 inches; brown (10YR 4/3) silt loam; common fine distinct light brownish gray (10YR 6/2) mottles; massive; very friable; medium acid.

Solum thickness ranges from 40 to 70 inches. Depth to bedrock is more than 60 inches. Reaction ranges from medium acid to neutral.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The B2 horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. In some pedons, the lower part of the B2 horizon is mottled in hue of 10YR, value of 6 or 7, and chroma of 1 or 2. The B2 horizon is silt loam or silty clay loam. The C horizon has hue of 10YR, value of 4 or 5, and chroma of 2, 3, or 4. Mottles are in shades of gray and brown. The C horizon is silt loam or silty clay loam.

Otwell series

The Otwell series consists of deep, moderately well drained fragipan soils that have very slow permeability. They formed in old silty alluvium on stream terraces that are generally above the flood plain. Slopes range from 0 to 6 percent.

The Otwell soils are in the same position on the landscape as Morehead and Elk soils. Morehead soils have mottles with chroma of 1 or 2 in the upper 24 inches of the argillic horizon but do not have a fragipan. Elk soils are well drained and do not have a fragipan.

Typical pedon of Otwell silt loam, 2 to 6 percent slopes; about 3,334 feet south of Soul Chapel Church, at the junction of Kentucky Highway 55 and Kentucky Highway 1061, about 10 miles south of Campbellsville, in Taylor County.

Ap—0 to 7 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many very fine roots; medium acid; clear smooth boundary.

B1—7 to 13 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; common very fine roots; very strongly acid; gradual wavy boundary.

B2t—13 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; moderate fine and medium subangular blocky structure; friable; few roots; few thin clay films; very strongly acid; clear wavy boundary.

Bx—20 to 56 inches; yellowish brown (10YR 5/4) silty clay loam; common medium light gray (10YR 7/2) mottles; strong very coarse prismatic structure parting to moderate medium angular blocky; very firm; brittle and compact; few thin clay films; very strongly acid; gradual wavy boundary.

B3—56 to 75 inches; light gray (10YR 7/2) gravelly silty clay loam; many medium distinct yellowish brown (10YR 5/6) mottles; massive; firm; 15 percent gravel; strongly acid.

Solum thickness ranges from 40 to 80 inches. Depth to bedrock is more than 5 feet. Depth to the fragipan ranges from 20 to 30 inches. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Coarse fragments range from 0 to 5 percent in the upper part of the solum and from 0 to 35 percent in the B3 and C horizons.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3.

The B1 and B2t horizons have hue of 10YR or 7.5YR, value of 5, and chroma of 4 or 6. They are silt loam or silty clay loam. The Bx horizon has hue of 10YR, value of 5 to 7, and chroma of 2 through 6. It is silt loam or silty clay loam. Content of pebbles ranges from 0 to 5 percent. The B3 horizon has colors similar to those in

the Bx horizon. It is silt loam or silty clay loam or their gravelly analogues. In some pedons this horizon is almost gravel free. The B3 horizon, in some pedons, is replaced with a C horizon that has colors and texture similar to those of the B3 horizon.

Riney series

The Riney series consists of deep, well drained soils that have moderately rapid permeability. They formed in residuum from sandstone. These sloping to moderately steep soils are on ridgetops. Slopes range from 6 to 20 percent.

Riney soils are in the same position on the landscape as Frederick and Nolichucky soils. Frederick soils have a clayey subsoil and Nolichucky soils are less sandy in the lower part of the subsoil and are underlain by clayey material.

Typical pedon of Riney loam, 6 to 12 percent slopes; in an idle field, about 2 miles southwest of Creal and 100 feet east of the Hart County line, which is about 11 miles northwest of Greensburg, in Green County:

Ap—0 to 8 inches; brown (10YR 4/3) loam; weak fine granular structure; very friable; strongly acid; clear smooth boundary.

B21t—8 to 28 inches; yellowish red (5YR 4/6) clay loam; moderate medium and fine subangular blocky structure; friable; few thin clay films; very strongly acid; gradual wavy boundary.

B22t—28 to 50 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium and fine subangular blocky structure; friable; few thin clay films; 10 percent quartzite pebbles; very strongly acid; gradual wavy boundary.

Cr—50 inches; brownish, reddish, and yellowish soft sandstone.

Solum thickness ranges from 40 to 60 inches. Depth to bedrock is 48 inches or more. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Content of quartzite pebbles ranges from 0 to 10 percent in the A horizon and from 0 to 15 percent in the B horizon.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The B21t horizon has hue of 5YR, value of 4 or 5, and chroma of 6 or 8. It is clay loam or sandy clay loam. The B22t horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. It is clay loam or sandy clay loam.

Sensabaugh series

The Sensabaugh series consists of deep, well drained, gravelly flood plain soils that have moderate or moderately rapid permeability. These nearly level to sloping soils formed in mixed silty alluvium and are subject to occasional flooding of very short duration, mostly in winter and spring but seldom during summer. Sensabaugh soils are along streams. Slopes range from 0 to 8 percent.

Sensabaugh soils are in the same position on the landscape as Nolin and Newark soils. Nolin and Newark soils do not have the gravel content of the Sensabaugh soils, and the Newark soils are somewhat poorly drained.

Typical pedon of Sensabaugh gravelly silt loam; in a pasture, about 3 miles northeast of Mannsville, and about 10 miles northeast of Campbellsville, in Taylor County:

Ap—0 to 10 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; 15 percent pebbles by volume; slightly acid; gradual wavy boundary.

B2—10 to 32 inches; brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; 25 percent pebbles by volume; slightly acid; gradual wavy boundary.

C—32 to 60 inches; brown (10YR 4/3) very gravelly silt loam; massive; very friable; 50 percent pebbles by volume; slightly acid.

Solum thickness ranges from 30 to 50 inches. Depth to bedrock is more than 60 inches. Reaction ranges from medium acid to neutral. Pebbles make up 10 to 25 percent by volume of the A horizon, 15 to 35 percent by volume of the B horizon, and 15 to 60 percent by volume of the C horizon.

The Ap horizon has hue of 10YR, value of 4, and chroma of 2 through 4. The B2 horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. The C horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. In some pedons, mottles are in shades of gray or brown.

Shelocta series

The Shelocta series consists of deep, well drained soils that have moderate permeability. They formed in silty colluvium. These gently sloping to very steep soils are on toe slopes and side slopes. Slopes range from 2 to 60 percent.

Shelocta soils are in the same position on the landscape as Garmon, Monongahela, and Lenberg soils. Garmon soils are not as deep to bedrock. Monongahela soils have a fragipan and are not as well drained. Lenberg soils have a clayey subsoil and are not as deep.

Typical pedon of Shelocta silt loam, in an area of Shelocta-Lenberg complex, 12 to 30 percent slopes; in an idle field, about 500 yards north of Barney School Road, 2-1/4 miles west of Kentucky Highway 337, about 6 miles north of Mannsville, and about 15 miles northeast of Campbellsville, in Taylor County:

Ap—0 to 4 inches; yellowish brown (10YR 5/4) silt loam; weak fine granular structure; very friable; many fine roots; 10 percent by volume rounded chert, sandstone, and siltstone pebbles 1/2 inch to 2 inches in diameter; very strongly acid; clear smooth boundary.

B1—4 to 13 inches; yellowish brown (10YR 5/6) gravelly silt loam; weak medium subangular blocky structure; very friable; common fine roots; common fine pores; 15 percent by volume pebbles; very strongly acid; clear wavy boundary.

B21t—13 to 26 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; many clay films; few small pebbles; strongly acid; clear smooth boundary.

B22t—26 to 34 inches; yellowish brown (10YR 5/6) gravelly silt loam; weak medium subangular blocky structure; friable; few fine roots; few fine pores; few clay films; few black coatings; 20 percent by volume rounded chert, sandstone, and siltstone pebbles 1/2 inch to 2 inches in diameter; strongly acid; clear smooth boundary.

B23t—34 to 44 inches; yellowish brown (10YR 5/4) silty clay loam; few fine faint yellowish red (5YR 5/6) and light brownish gray (10YR 6/2) mottles; moderate medium angular blocky structure; friable; few fine roots; few fine pores; common clay films; 5 percent pebbles by volume; very strongly acid; gradual smooth boundary.

IIB24t—44 to 64 inches; brownish yellow (10YR 6/6) silty clay loam; common medium distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure parting to weak fine angular blocky; firm; few fine roots; few fine pores; many clay films; very strongly acid; gradual smooth boundary.

IIB3—64 to 80 inches; mottled yellowish brown (10YR 5/8) and light olive gray (5Y 6/2) silty clay; weak coarse angular blocky structure; very firm; few clay films; very strongly acid.

Solum thickness is more than 40 inches. Depth to bedrock is more than 60 inches. Reaction is strongly acid or very strongly acid unless the soil has been limed. Content of coarse fragments ranges from 5 to 35 percent in the A horizon and the upper part of the B horizon. The IIB horizon contains few to 15 percent soft shale fragments.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 through 4. It is gravelly silt loam or silt loam. The B horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 4 through 8. It is silt loam or silty clay loam and their gravelly analogues. The IIB or C horizon has hue of 10YR, value of 5 or 6, and chroma of 4 through 8. Mottles are grayish, brownish, or reddish. Texture is silty clay loam, silty clay, or clay.

In some pedons, there is a IIC horizon that is brownish or grayish, and texture is clayey.

Taft series

The Taft series consists of deep, somewhat poorly drained fragipan soils that have slow permeability. These nearly level upland soils formed in a silt mantle overlying residuum from limestone. Slopes range from 0 to 2 percent.

Taft soils are in the same position on the landscape as Mountview and Dickson soils. Mountview soils are on higher and narrower convex ridges, do not have a fragipan, and are well drained. Dickson soils are moderately well drained.

Typical pedon of Taft silt loam; in a cultivated field, about 4,800 feet southeast of Mac, and about 10 miles northwest of Campbellsville, in Taylor County:

Ap—0 to 10 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; very friable; many roots; medium acid; clear smooth boundary.

B2—10 to 24 inches; pale brown (10YR 6/3) silt loam; common medium faint gray (10YR 6/1) mottles; weak medium subangular blocky structure; friable; few roots; very strongly acid; gradual wavy boundary.

Bx1—24 to 40 inches; pale brown (10YR 6/3) silty clay loam; common medium distinct light gray (10YR 7/1) and strong brown (7.5YR 5/6) mottles; moderate very coarse prismatic structure parting to moderate medium angular and subangular blocky; very firm, compact and brittle; few faint clay films; very strongly acid; abrupt wavy boundary.

Bx2—40 to 60 inches; mottled light gray (10YR 7/1) and strong brown (7.5YR 5/6) silty clay loam; moderate very coarse prismatic structure parting to moderate medium angular and subangular blocky; very firm, compact and brittle; few clay films; very strongly acid.

Solum thickness ranges from 50 to 80 inches. Depth to bedrock is more than 60 inches. Reaction is strongly acid or very strongly acid, unless the soil has been limed. Depth to the fragipan ranges from 20 to 36 inches.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The B2 horizon has hue of 10YR, value of 5 or 6, and chroma of 3 through 4. Mottles are in shade of gray and brown. The B2 horizon is silt loam or silty clay loam. The Bx horizon is in shades of gray and brown. It is silt loam or silty clay loam.

The Taft soils in this survey are taxadjuncts to the series because they have a temperature that is two or three degrees cooler than typical. These differences do not alter their use and management.

Tyler series

The Tyler series consists of deep, somewhat poorly drained fragipan soils that have slow permeability. They formed in silty colluvium overlaying residuum, mainly from New Providence (green) shale. These nearly level soils are on broad areas above the flood plains of Robinson Creek and its tributaries. Slopes range from 0 to 2 percent.

Tyler soils are in the same position on the landscape as Monongahela soils. Monongahela soils are better drained than Tyler soils.

Typical pedon of Tyler silt loam; in a cultivated field, about 1,100 feet northwest of Mannsville, and about 10 miles northeast of Campbellsville, in Taylor County:

Ap—0 to 4 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; very friable; slightly acid; clear smooth boundary.

A2—4 to 9 inches; light brownish gray (10YR 6/2) silt loam; few fine distinct brownish yellow (10YR 6/6) mottles; weak fine granular structure; very friable; very strongly acid; clear smooth boundary.

B2t—9 to 20 inches; pale brown (10YR 6/3) silt loam; common fine faint gray (10YR 6/1) mottles; weak medium subangular blocky structure; friable; few thin clay films; very strongly acid; abrupt wavy boundary.

Bx1—20 to 38 inches; gray (10YR 6/1) silty clay loam; common fine distinct brownish yellow (10YR 6/6) mottles; moderate very coarse prismatic structure; very firm and compact; very strongly acid; gradual wavy boundary.

Bx2—38 to 64 inches; brownish yellow (10YR 6/6) silt loam; many medium distinct gray (10YR 6/1) mottles; moderate very coarse prismatic structure; very firm and compact; very strongly acid.

Solum thickness ranges from 40 to 72 inches. Depth to hard rock is more than 60 inches. Depth to the fragipan ranges from 16 to 24 inches. Reaction is strongly acid or very strongly acid, unless the soil has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 2 or 3. The B2t horizon has hue of 10YR, value of 5 or 6, and chroma of 3 through 6. Mottles have chroma of 1 or 2. The B2t horizon is silt loam or silty clay loam. The Bx horizon is mottled in shades of gray, brown, or yellow. It is silt loam or silty clay loam.

formation of the soils

In this section, the factors of soil formation are discussed and related to the soils in the survey area. In addition, the processes of soil function are described.

factors of soil formation

Soil is a natural, three dimensional body of the earth's surface that supports plants and that has properties resulting from the intergrated effect of climate and living matter acting upon earthy parent material, as conditioned by relief or topography over a period of time.

The interaction of five main factors results in differences among the soils. These factors are the physical and chemical composition of the parent material; the climate during and after the accumulation of the parent material; the kind of plants and organisms living in the soil; the relief of the land and its effect on runoff; and the length of time the soil forming factors have been in progress. In the following paragraphs, the factors of soil formation are discussed as they relate to the soils of Green and Taylor Counties.

climate

Climate affects the physical, chemical, and biological relationship in soils. It influences the kind and number of plants and animals, the rates of weathering of rocks and decomposition of minerals, erosion, and the rate of soil formation. The climate in Green and Taylor Counties is temperate with moderately cold winters and warm humid summers. The average annual precipitation is about 50 inches and the mean annual air temperature is about 55 degrees F. The soils are seldom completely dry and are subject to leaching throughout the year. The soluable bases have been largely leached out of the solum, and clay minerals have moved from the surface layer into the subsoil. As a result, most of the soils have a leached, acid surface layer and a subsoil that is finer textured than the surface layer. Examples are soils of the Mountview and Frederick series.

plant and animal life

Plants affect soil formation mainly by adding organic matter. Animals, bacteria, and fungi contribute by converting the remains of plants to organic matter and plant nutrients. The organic matter imparts a dark color to the soil material and the humus aids in the formation of soil structure. Most of the soils in Green and Taylor Counties formed under hardwood forests. These soils are characterized by a thin, dark surface layer; a leached, lighter colored subsurface layer; and a brighter colored subsoil.

Man greatly altered the surface layer and changed the soil environment where he cleared the forest and plowed the soil. He has mixed the soil layers, moved soil from place to place, added fertilizer and lime, and introduced new plants. In places, accelerated erosion has removed most of the original surface layer and exposed the subsoil layers.

parent material

Parent material is the unconsolidated mass from which soils form. It is produced by the weathering or decomposition of rocks and minerals. In Green and Taylor Counties the soils formed from loess, stream alluvium, colluvium, and residual material.

A thin layer of loess is on most of the broader ridges where Mountview and Dickson soils formed, partly in loess and partly in residuum. Newark and Nolin soils formed in recent alluvium on flood plains. Shelocta soils formed in colluvium below steeper Garmon soils. Frederick and Caneyville soils developed in material weathered from limestone, Riney soils in material weathered from sandstone, and Colyer soils in material weathered from shale.

relief

The relief of the landscape influences soil formation primarily through its effect on drainage and erosion. It also influences the formation of soils through variations in exposure to the sun, wind, air drainage, soil temperature, and plant cover.

In areas of steep soils, a considerable amount of water is lost through runoff, and only a small amount of water enters the soil. As a result, erosion removes the soil almost as rapidly as it forms. Newark and Morehead soils are somewhat poorly drained and have a high seasonal water table because they are in low areas on flood plains or low terraces.

In areas of more gently sloping soils, enough water moves downward to cause leaching and a pronounced accumulation of clay in the subsoil. These soils are likely

to be deep and have well defined layers or profiles. In some places the soil shows some evidence of wetness, such as mottling in the subsoil. A fragipan that restricts water and air movement may be present, such as in Dickson soils.

Local differences in soils are largely the result of differences in relief and parent material.

time

A long period of time is required for distinct soil profiles to develop. The length of time required depends mainly on the kind and nature of the parent material and the topography. Plant and animal life and climate have comparatively less influence on the rate of soil development. With the exception of soils formed in recent alluvium, enough time has elapsed for the soils in Green and Taylor Counties to express the interaction of the factors of soil formation.

Soils formed in recent sediment have weak horizon development. The surface horizon may show a slight increase in the organic matter content and the subsoil may have weak structure. Such soils are said to be youthful, or immature; examples are Nolin and Newark soils. After a long time, and if there is no further addition of sediment, weathering occurs; some of the finer material moves into the subsoil, and the structure and color of the subsoil may change. Elk soils are examples of this maturing process. A soil is generally said to be mature when it has been in place long enough to acquire distinct profile characteristics. Examples of mature soils in Green and Taylor Counties are Mountview and Frederick soils.

processes of soil formation

The formation of a succession of layers, or horizons, in soil is the result of one or more of the following processes: (1) accumulation of organic matter; (2) leaching of carbonates and more soluble minerals; (3) chemical weathering (chiefly by hydrolysis) of primary minerals into silicate clay minerals; (4) translocation of the silicate clays, and probably some silt-sized particles, from one horizon to another; and (5) reduction and transfer of iron.

Several of these processes have been active in the formation of most soils in Green and Taylor Counties. The interaction of the first four factors is reflected in the strongly expressed horizons of Mountview and Frederick soils. All five processes have probably been active in the formation of the moderately well drained Dickson and Otwell soils.

Some organic matter has accumulated in all the soils to form the surface layer, or A1 horizon. Most of the soils in Green and Taylor Counties contain moderate amounts of organic matter in the surface layer. The A1 horizon becomes a part of the Ap horizon through tillage and loses its identity.

The translocation of clay minerals is an important process in the horizon development of many soils in the county. As clay minerals are removed from the A horizon, they are largely immobilized and accumulate as clay films on ped faces, in pores, and in root channels in the B horizon.

A fragipan has formed in the B horizon of some of the moderately well drained soils on uplands and terraces. This is a dense, compact layer that is seemingly cemented. It is hard or very hard when dry and brittle when moist. It tends to rupture suddenly when lateral pressure is applied, rather than deform slowly. It generally is mottled, is slowly permeable or very slowly permeable to water, and has few to many bleached fracture planes that form polygons.

The reduction and transfer of iron has occured in all soils that lack good natural drainage. This process is known as gleying. Part of the iron may be reoxidized and segregated, forming the yellowish brown, strong brown, and other bright colored mottles on an essentially gray matrix in the subsoil. Nodules or concretions of iron or manganese are commonly formed under these conditions.

As silicate clay forms from primary minerals, some iron is commonly freed as hydrated oxide. These oxides are more or less red, and, even when present in small amounts, give at least a brownish color to the soil material. They are largely responsible for the strong brown and yellowish brown colors that dominate the subsoil of many soils in Green and Taylor Counties.

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glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as—

	Inches
Very low	Less than 2.4
Low	2.4 to 3.2
Moderate	3.2 to 5.2
High	More than 5.2

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a fragment.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15.2 to 38.1 centimeters (6 to 15 inches) long.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured soil. Sandy clay, silty clay, and clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual.* The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Large stones (in tables). Rock fragments 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop cf 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to insure satisfactory performance of the soil for a specific use.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded in the period 1951-74 at Greensburg, Kentucky]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	44.5	23.4	33.9	72	-8	9	4.42	2.06	6.34	8	4.3
February---	47.9	24.7	36.4	73	-2	13	4.02	1.77	5.84	7	3.3
March------	56.7	32.7	44.7	82	13	76	4.87	2.72	6.61	9	2.5
April------	69.3	43.1	56.2	88	25	208	4.43	2.76	5.92	8	.0
May--------	78.2	52.0	65.1	92	33	468	4.91	3.01	6.61	8	.0
June-------	85.4	60.7	73.0	97	45	690	4.75	2.90	6.41	7	.0
July-------	88.9	64.6	76.8	99	50	831	5.11	2.65	7.10	8	.0
August-----	88.3	62.8	75.6	98	49	794	3.91	1.96	5.50	6	.0
September--	83.2	55.8	69.5	97	37	585	3.60	1.44	5.34	6	.0
October----	72.5	42.6	57.5	90	25	255	2.26	.90	3.35	4	.0
November---	58.0	33.2	45.7	81	14	24	3.82	2.06	5.25	7	.9
December---	47.7	26.6	37.2	73	3	23	4.29	2.08	6.08	7	2.0
Yearly:											
Average--	68.4	43.5	56.0	---	---	---	---	---	---	---	---
Extreme--	---	---	---	100	-11	---	---	---	---	---	---
Total----	---	---	---	---	---	3,976	50.39	42.57	57.85	85	13.0

[1] A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1951-74 at Greensburg, Kentucky]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	April 7	April 19	May 7
2 years in 10 later than--	April 2	April 15	May 1
5 years in 10 later than--	March 22	April 6	April 20
First freezing temperature in fall:			
1 year in 10 earlier than--	October 28	October 19	October 4
2 years in 10 earlier than--	November 1	October 23	October 8
5 years in 10 earlier than--	November 9	October 31	October 17

TABLE 3.--GROWING SEASON

[Recorded in the period 1951-74 at Greensburg, Kentucky]

Probability	Length of growing season if daily minimum temperature is--		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	213	190	159
8 years in 10	219	196	166
5 years in 10	231	207	179
2 years in 10	243	219	193
1 year in 10	250	224	199

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Green County	Taylor County	Total-- Area	Extent
		Acres	Acres	Acres	Pct
Bo	Bonnie silt loam, terrace	420	0	420	0.1
CaC	Caneyville silt loam, very rocky, 6 to 20 percent slopes	1,730	340	2,070	0.6
CaE	Caneyville-Frederick silt loams, very rocky, 20 to 30 percent slopes	12,080	2,330	14,410	4.0
CoD	Colyer Variant silt loam, 12 to 30 percent slopes	0	780	780	0.2
DcB	Dickson silt loam, 2 to 6 percent slopes	3,980	5,300	9,280	2.6
ElB	Elk silt loam, 2 to 6 percent slopes	3,540	1,300	4,840	1.4
ElC	Elk silt loam, 6 to 12 percent slopes	1,720	450	2,170	0.6
FkB	Frankstown silt loam, 2 to 6 percent slopes	90	2,030	2,120	0.6
FkC	Frankstown silt loam, 6 to 12 percent slopes	1,510	10,140	11,650	3.3
FkD	Frankstown silt loam, 12 to 20 percent slopes	1,090	9,010	10,100	2.8
FkE	Frankstown silt loam, 20 to 30 percent slopes	1,900	8,160	10,060	2.8
FrB	Frederick silt loam, 2 to 6 percent slopes	450	0	450	0.1
FrC	Frederick silt loam, 6 to 12 percent slopes	38,590	25,840	64,430	18.0
FrD	Frederick silt loam, 12 to 20 percent slopes	11,580	5,700	17,280	4.8
FrE	Frederick silt loam, 20 to 30 percent slopes	8,230	1,800	10,030	2.8
FsD3	Frederick silty clay loam, 12 to 20 percent slopes, severely eroded	29,740	6,650	36,390	10.0
FvE	Frederick-Nolichucky complex, 20 to 30 percent slopes	6,690	8,270	14,960	4.2
GaF	Garmon-Shelocta complex, 25 to 60 percent slopes	2,560	24,470	27,030	7.6
LoF	Lowell-Caneyville silt loams, very rocky, 30 to 60 percent slopes	10,050	1,600	11,650	3.3
Me	Melvin silt loam	1,870	750	2,620	0.7
MgB	Monongahela silt loam, 2 to 6 percent slopes	0	3,770	3,770	1.1
Mh	Morehead silt loam	1,850	2,340	4,190	1.2
MoB	Mountview silt loam, 2 to 6 percent slopes	18,950	25,070	44,020	12.3
MoC	Mountview silt loam, 6 to 12 percent slopes	290	160	450	0.1
NdC	Needmore silty clay, 6 to 12 percent slopes, severely eroded	700	450	1,150	0.3
Ne	Newark silt loam	2,930	5,200	8,130	2.3
NhD	Nolichucky loam, 12 to 20 percent slopes	470	1,270	1,740	0.5
No	Nolin silt loam	9,610	4,920	14,530	4.1
OtA	Otwell silt loam, 0 to 2 percent slopes	230	240	470	0.1
OtB	Otwell silt loam, 2 to 6 percent slopes	1,910	1,260	3,170	0.9
Pt	Pits	60	20	80	*
ReC	Riney loam, 6 to 12 percent slopes	2,130	3,090	5,220	1.5
ReD	Riney loam, 12 to 20 percent slopes	970	430	1,400	0.4
Se	Sensabaugh gravelly silt loam	30	1,960	1,990	0.6
ShB	Shelocta silt loam, 2 to 6 percent slopes	0	350	350	0.1
ShC	Shelocta silt loam, 6 to 12 percent slopes	0	2,310	2,310	0.6
SlD	Shelocta-Lenberg complex, 12 to 30 percent slopes	0	7,640	7,640	2.1
Ta	Taft silt loam	1,980	750	2,730	0.8
Ty	Tyler silt loam	0	350	350	0.1
	Small water areas (Less than 40 acres)	550	780	1,330	0.4
	Land areas	180,480	177,280	357,760	100.0
	Large water areas	0	4,480	4,480	
	Total area	180,480	181,760	362,240	

* Less than 0.1 percent.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Corn	Soybeans	Tobacco	Wheat	Grass-legume hay	Pasture
	Bu	Bu	Lb	Bu	Ton	AUM*
Bo Bonnie	80	35	---	35	3.5	6.0
CaC Caneyville	---	---	---	---	---	5.5
CaE Caneyville-Frederick	---	---	---	---	---	5.0
CoD Colyer Variant	---	---	---	---	2.0	4.0
DcB Dickson	80	35	2,400	40	3.5	6.0
ElB Elk	125	45	3,200	45	4.5	9.0
ElC Elk	110	35	2,900	40	4.0	8.0
FkB Frankstown	125	40	3,000	45	3.5	8.0
FkC Frankstown	120	35	2,200	40	3.5	7.5
FkD Frankstown	110	---	---	35	3.0	5.5
FkE Frankstown	---	---	---	---	---	5.0
FrB Frederick	125	45	3,100	45	3.5	8.0
FrC Frederick	120	40	2,250	40	3.0	8.0
FrD Frederick	110	---	---	35	3.0	7.5
FrE Frederick	---	---	---	---	2.5	7.0
FsD3 Frederick	---	---	---	---	2.0	7.0
FvE Frederick-Nolichucky	---	---	---	---	2.5	6.0
GaF Garmon-Shelocta	---	---	---	---	---	---
LoF Lowell-Caneyville	---	---	---	---	---	---
Me Melvin	80	35	---	35	3.5	7.0
MgB Monongahela	110	35	2,400	40	3.0	6.5

See footnote at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Soybeans	Tobacco	Wheat	Grass-legume hay	Pasture
	Bu	Bu	Lb	Bu	Ton	AUM*
Mh----------------------- Morehead	100	40	2,400	40	4.0	8.0
MoB---------------------- Mountview	110	40	2,400	45	4.0	8.5
MoC---------------------- Mountview	90	35	2,250	40	3.0	8.0
NdC---------------------- Needmore	---	---	---	---	2.0	4.0
Ne----------------------- Newark	100	40	2,500	45	4.5	8.5
NhD---------------------- Nolichucky	75	---	---	35	3.0	6.0
No----------------------- Nolin	135	45	3,300	45	4.5	9.0
OtA---------------------- Otwell	105	35	2,000	40	3.5	6.0
OtB---------------------- Otwell	105	35	2,400	40	3.5	6.0
Pt**. Pits						
ReC---------------------- Riney	85	30	2,600	40	3.0	6.0
ReD---------------------- Riney	75	---	2,400	35	2.5	5.0
Se----------------------- Sensabaugh	125	45	---	45	3.5	7.0
ShB---------------------- Shelocta	110	35	2,700	45	3.5	8.0
ShC---------------------- Shelocta	100	30	2,300	40	---	7.0
SlD---------------------- Shelocta-Lenberg	---	---	---	---	2.0	5.0
Ta----------------------- Taft	90	35	---	30	3.0	6.0
Ty----------------------- Tyler	95	35	---	30	3.0	6.0

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Dashes indicate no acreage]

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I:					
Green County	---	---	---	---	---
Taylor County	---	---	---	---	---
II:					
Green County	43,570	28,920	14,620	30	---
Taylor County	50,960	39,080	9,920	1,960	---
III:					
Green County	48,510	44,240	4,270	---	---
Taylor County	43,840	41,990	1,850	---	---
IV:					
Green County	14,110	14,110	---	---	---
Taylor County	16,410	16,410	---	---	---
V:					
Green County	---	---	---	---	---
Taylor County	---	---	---	---	---
VI:					
Green County	61,070	47,260	---	13,810	---
Taylor County	36,420	32,970	---	3,450	---
VII:					
Green County	12,610	2,560	---	10,050	---
Taylor County	26,070	24,470	---	1,600	---
VIII:					
Green County	---	---	---	---	---
Taylor County	---	---	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
Bo-----Bonnie	1w	Slight	Severe	Severe	Severe	Pin oak	90	Eastern cottonwood, red maple, American sycamore, sweetgum, pin oak.
						Eastern cottonwood	100	
						Sweetgum	---	
						American sycamore	---	
CaC-----Caneyville	3x	Moderate	Moderate	Slight	Moderate	Black oak	69	Black oak, Virginia pine, white oak, loblolly pine.
						Yellow-poplar	88	
						Eastern redcedar	45	
						White oak	63	
CaE*:								
Caneyville-----(north aspect)	3x	Severe	Severe	Slight	Moderate	Black oak	69	Black oak, Virginia pine, white oak, loblolly pine.
						Eastern redcedar	45	
						White oak	63	
						Yellow-poplar	88	
Caneyville-----(south aspect)	4x	Severe	Severe	Moderate	Slight	Scarlet oak	60	Black oak, Virginia pine, white oak, loblolly pine.
						Eastern redcedar	35	
Frederick	2c	Moderate	Severe	Slight	Moderate	Northern red oak	76	Eastern white pine, black oak, yellow-poplar, northern red oak, Virginia pine, white oak.
						Yellow-poplar	95	
						Black locust	---	
						White oak	80	
						Black walnut	---	
CoD-----Colyer Variant	4d	Moderate	Moderate	Severe	Slight	Scarlet oak	60	Virginia pine, chestnut oak, shortleaf pine, eastern white pine.
						Virginia pine	55	
						Chestnut oak	59	
DcB-----Dickson	3o	Slight	Slight	Slight	Moderate	Yellow-poplar	92	Loblolly pine, black oak, shortleaf pine, white oak, yellow-poplar, eastern white pine.
						White oak	73	
						Black oak	73	
ElB, ElC-----Elk	2o	Slight	Slight	Slight	Moderate	Northern red oak	80	Eastern white pine, northern red oak, yellow-poplar, black walnut, loblolly pine, shortleaf pine, black oak, white oak.
						Yellow-poplar	90	
						Hackberry	---	
FkB, FkC-----Frankstown	2o	Slight	Slight	Slight	Moderate	Northern red oak	79	Eastern white pine, yellow-poplar, Virginia pine, shortleaf pine, black oak, white oak.
						Yellow-poplar	85	
						Shortleaf pine	80	
						Virginia pine	80	
						White oak	80	
						Black walnut	---	
						Black locust	---	
						White ash	---	
FkD, FkE-----Frankstown	2r	Moderate	Moderate	Slight	Moderate	Northern red oak	79	Eastern white pine, yellow-poplar, Virginia pine, shortleaf pine, black oak, white oak.
						Yellow-poplar	85	
						Shortleaf pine	80	
						Virginia pine	80	
						White oak	80	
						Black walnut	---	
						Black locust	---	
						White ash	---	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Trees to plant
FrB, FrC: Frederick	2c	Slight	Moderate	Slight	Moderate	Northern red oak	76	Eastern white pine, black oak, yellow-poplar, northern red oak, Virginia pine, white oak.
						Yellow-poplar	95	
						Black locust	---	
						White oak	80	
						Black walnut	---	
FrD, FrE, FsD3: Frederick	2c	Moderate	Severe	Slight	Moderate	Northern red oak	76	Eastern white pine, black oak, yellow-poplar, northern red oak, white oak, Virginia pine.
						Yellow-poplar	95	
						Black locust	---	
						White oak	80	
						Black walnut	---	
FvE*:								
Frederick	2c	Moderate	Severe	Slight	Moderate	Northern red oak	76	Eastern white pine, black oak, yellow-poplar, northern red oak, white oak, Virginia pine.
						Yellow-poplar	95	
						Black locust	---	
						White oak	80	
						Black walnut	---	
Nolichucky	2r	Moderate	Moderate	Slight	Moderate	Yellow-poplar	90	Shortleaf pine, loblolly pine, eastern white pine. yellow-poplar, black walnut.
						Southern red oak	70	
						Shortleaf pine	70	
						Loblolly pine	80	
						Virginia pine	70	
						Eastern white pine	80	
GaF*:								
Garmon	3r	Severe	Severe	Slight	Moderate	Northern red oak	76	Yellow-poplar, Virginia pine, black oak, loblolly pine, white oak, eastern white pine.
						Virginia pine	75	
						Eastern redcedar	38	
						Chestnut oak	69	
						Yellow-poplar	95	
Shelocta (north aspect)	2r	Severe	Severe	Slight	Moderate	Northern red oak	76	Eastern white pine, northern red oak, yellow-poplar, black walnut, Virginia pine, shortleaf pine.
						Yellow-poplar	102	
						Virginia pine	78	
						Shortleaf pine	75	
Shelocta (south aspect)	3r	Moderate	Severe	Slight	Moderate	White oak	64	Eastern white pine, black pine, Virginia pine, loblolly pine, shortleaf pine, white oak.
						Virginia pine	71	
						Shortleaf pine	65	
						Black oak	---	
LoF*:								
Lowell	2c	Severe	Severe	Slight	Moderate	Northern red oak	80	Eastern white pine, black oak, Virginia pine, loblolly pine, white oak, white ash.
						Black oak	89	
						Virginia pine	80	
						White ash	75	
Caneyville (north aspect)	3x	Severe	Severe	Slight	Moderate	Yellow-poplar	90	Black oak, loblolly pine, Virginia pine, white oak.
						Black oak	69	
						White oak	63	
Caneyville (south aspect)	4x	Severe	Severe	Moderate	Moderate	Scarlet oak	69	Black oak, Virginia pine, white oak, loblolly pine.
						Eastern red cedar	45	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Trees to plant
Me: Melvin	1w	Slight	Severe	Severe	Severe	Pin oak	101	Pin oak, American sycamore, sweetgum, loblolly pine.
						Sweetgum	---	
						Elm	---	
						Sycamore	---	
MgB: Monongahela	3o	Slight	Slight	Slight	Moderate	Yellow-poplar	85	Eastern white pine, black oak, loblolly pine, white oak, Virginia pine, shortleaf pine, yellow-poplar.
						Virginia pine	77	
						Black oak	72	
Mh: Morehead	2w	Slight	Moderate	Slight	Moderate	Yellow-poplar	80	Shortleaf pine, yellow-poplar, Virginia pine, sweetgum, pin oak, eastern white pine.
						Shortleaf pine	84	
						Pitch pine	---	
						Virginia pine	---	
						Red maple	---	
						Pin oak	---	
						Northern red oak	---	
MoB, MoC: Mountview	2o	Slight	Slight	Slight	Moderate	Yellow-poplar	90	Shortleaf pine, white ash, loblolly pine, white oak, Virginia pine, black oak, yellow-poplar, black walnut.
						White oak	82	
						Shortleaf pine	65	
						Virginia pine	69	
						Black oak	85	
NdC: Needmore	4c	Slight	Moderate	Severe	Slight	Virginia pine	60	Loblolly pine, Virginia pine, eastern redcedar.
						Eastern redcedar	40	
Ne: Newark	1w	Slight	Moderate	Slight	Severe	Pin oak	99	Eastern cottonwood, sweetgum, loblolly pine, red maple, American sycamore, eastern white pine, yellow-poplar.
						Eastern cottonwood	94	
						Northern red oak	85	
						Yellow-poplar	95	
						Sweetgum	88	
NhD: Nolichucky	2o	Moderate	Moderate	Slight	Moderate	Yellow-poplar	90	Shortleaf pine, northern red oak, loblolly pine, white ash, eastern white pine, yellow-poplar, black walnut.
						Southern red oak	70	
						Shortleaf pine	70	
						Virginia pine	70	
No: Nolin	1o	Slight	Slight	Slight	Severe	Sweetgum	85	Sweetgum, yellow-poplar, eastern white pine, eastern cottonwood, white ash, cherrybark oak, black walnut.
						Yellow-poplar	107	
						Red maple	---	
						White ash	---	
OtA, OtB: Otwell	3o	Slight	Slight	Slight	Moderate	White oak	72	Eastern white pine, black oak, yellow-poplar, white oak, white ash.
						Yellow-poplar	80	
						Sugar maple	70	
ReC, ReD: Riney	2o	Slight	Slight	Slight	Moderate	Northern red oak	80	Yellow-poplar, northern red oak, shortleaf pine, loblolly pine, black walnut, eastern white pine, white ash.
						Yellow-poplar	93	
						Shortleaf pine	80	
						White oak	79	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordi- nation symbol	Management concerns: Erosion hazard	Management concerns: Equip- ment limita- tion	Management concerns: Seedling mortal- ity	Management concerns: Plant competi- tion	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
Se: Sensabaugh	2o	Slight	Slight	Slight	Moderate	Yellow-poplar	100	Yellow-poplar, black walnut, loblolly pine, white ash, black oak, white oak.
						White oak	80	
						Virginia pine	75	
ShB, ShC: Shelocta	2o	Slight	Slight	Slight	Moderate	Northern red oak	71	Eastern white pine, northern red oak, yellow-poplar, black walnut, Virginia pine, shortleaf pine.
						Yellow-poplar	93	
						Virginia pine	76	
						Shortleaf pine	69	
SlD*: Shelocta	2r	Moderate	Moderate	Slight	Moderate	Northern red oak	76	Eastern white pine, northern red oak, yellow-poplar, black walnut, Virginia pine, shortleaf pine.
						Yellow-poplar	102	
						Virginia pine	78	
						Shortleaf pine	75	
Lenberg	3c	Severe	Moderate	Slight	Moderate	White oak	70	Eastern white pine, black oak, shortleaf pine, white oak, Virginia pine, loblolly pine.
						Virginia pine	70	
						Black oak	---	
						Chestnut oak	---	
						Scarlet oak	---	
Ta: Taft	2w	Slight	Moderate	Moderate	Moderate	Yellow-poplar	90	Loblolly pine, sweetgum, yellow-poplar, white ash.
						White oak	60	
						Loblolly pine	---	
						Sweetgum	80	
						Shortleaf pine	60	
Ty: Tyler	2w	Slight	Moderate	Slight	Moderate	Northern red oak	80	White ash, yellow-poplar, Virginia pine, loblolly pine, sweetgum.
						White oak	---	
						Slippery elm	---	
						American beech	---	
						White ash	---	
						Sugar maple	---	
						American sycamore	---	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Bo: Bonnie	Severe: floods, wetness.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.	Severe: wetness, floods.
CaC: Caneyville	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope, thin layer.
CaE*:					
Caneyville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Frederick	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CoD: Colyer Variant	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.	Severe: slope, thin layer.
DcB: Dickson	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight	Slight.
ElB: Elk	Severe: floods.	Slight	Moderate: slope.	Slight	Slight.
ElC: Elk	Severe: floods.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
FkB: Frankstown	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.
FkC: Frankstown	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
FkD: Frankstown	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
FkE: Frankstown	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
FrB: Frederick	Slight	Slight	Moderate: slope.	Slight	Slight.
FrC: Frederick	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
FrD: Frederick	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
FrE: Frederick	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
FsD3: Frederick	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too clayey.	Severe: slope.
FvE*:					
Frederick	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
FvE*:					
Nolichucky	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
GaF*:					
Garmon	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Shelocta	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
LoF*:					
Lowell	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Caneyville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Me Melvin	Severe: floods, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
MgB Monongahela	Moderate: wetness, percs slowly.	Moderate: wetness. percs slowly.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
Mh Morehead	Severe: floods, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
MoB Mountview	Slight	Slight	Moderate: slope.	Slight	Slight.
MoC Mountview	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
NdC Needmore	Severe: too clayey.	Severe: too clayey.	Severe: slope, too clayey.	Severe: too clayey.	Moderate: slope, thin layer.
Ne Newark	Severe: floods, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
NhD Nolichucky	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
No Nolin	Severe: floods.	Slight	Moderate: floods.	Slight	Moderate: floods.
OtA, OtB Otwell	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
Pt*. Pits					
ReC Riney	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
ReD Riney	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Se Sensabaugh	Severe: floods.	Slight	Severe: small stones.	Slight	Moderate: small stones, floods.
ShB Shelocta	Slight	Slight	Severe: small stones.	Slight	Slight.
ShC Shelocta	Moderate: slope.	Moderate: slope.	Severe: slope, small stones.	Slight	Moderate: slope.
SlD*:					
Shelocta	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Lenberg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Ta Taft	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Ty Tyler	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Bo----------------- Bonnie	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
CaC----------------- Caneyville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CaE*:										
Caneyville---------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Frederick----------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
CoD----------------- Colyer Variant	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
DcB----------------- Dickson	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ElB----------------- Elk	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ElC----------------- Elk	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FkB----------------- Frankstown	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FkC----------------- Frankstown	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FkD----------------- Frankstown	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FkE----------------- Frankstown	Very poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FrB----------------- Frederick	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FrC----------------- Frederick	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FrD----------------- Frederick	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FrE----------------- Frederick	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FsD3---------------- Frederick	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
FvE*:										
Frederick----------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Nolichucky---------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
GaF*:										
Garmon	Very poor.	Poor	Good	Good	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Shelocta	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
LoF*:										
Lowell	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Caneyville	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Me Melvin	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
MgB Monongahela	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Very poor.
Mh Morehead	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Poor.
MoB Mountview	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
MoC Mountview	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
NdC Needmore	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ne Newark	Fair	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Fair.
NhD Nolichucky	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
No Nolin	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
OtA, OtB Otwell	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Very poor.
Pt*. Pits										
ReC Riney	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ReD Riney	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Se Sensabaugh	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ShB Shelocta	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
ShC Shelocta	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SlD*:										
Shelocta	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SlD*:										
Lenberg	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ta: Taft	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Ty: Tyler	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Bo: Bonnie	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
CaC: Caneyville	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: low strength.	Moderate: slope, thin layer.
CaE*:						
Caneyville	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Frederick	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
CoD: Colyer Variant	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, low strength, slope.	Severe: slope, thin layer.
DcB: Dickson	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength.	Slight.
ElB: Elk	Slight	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength.	Slight.
ElC: Elk	Moderate: slope.	Severe: floods.	Severe: floods.	Severe: slope, floods.	Severe: low strength.	Moderate: slope.
FkB: Frankstown	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
FkC: Frankstown	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
FkD, FkE: Frankstown	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
FrB: Frederick	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell. slope.	Severe: low strength.	Slight.
FrC: Frederick	Moderate: too clayey. slope.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
FrD, FrE, FsD3: Frederick	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
FvE*:						
Frederick	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
FvE*:						
Nolichucky	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
GaF*:						
Garmon	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.
Shelocta	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
LoF*:						
Lowell	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Caneyville	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Me Melvin	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: low strength, wetness, floods.	Severe: wetness.
MgB Monongahela	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.	Slight.
Mh Morehead	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: low strength, wetness.	Severe: wetness.
MoB Mountview	Moderate: too clayey.	Slight	Moderate: shrink-swell.	Moderate: slope.	Severe: low strength.	Slight.
MoC Mountview	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
NdC Needmore	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, thin layer.
Ne Newark	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: low strength, wetness, floods.	Severe: wetness.
NhD Nolichucky	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
No Nolin	Moderate: wetness, floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods.	Moderate: floods.
OtA Otwell	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
OtB Otwell	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: low strength.	Slight.
Pt* Pits						

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
ReC: Riney	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
ReD: Riney	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Se: Sensabaugh	Moderate: wetness, floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: small stones, floods.
ShB: Shelocta	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
ShC: Shelocta	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
SlD*:						
Shelocta	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Lenberg	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Ta: Taft	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Ty: Tyler	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Bo: Bonnie	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
CaC: Caneyville	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, hard to pack.
CaE*:					
Caneyville	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, too clayey, hard to pack.
Frederick	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: slope.
CoD: Colyer Variant	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope, thin layer.
DcB: Dickson	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
ElB: Elk	Moderate: floods.	Severe: floods.	Moderate: too clayey, floods.	Moderate: floods.	Fair: too clayey.
ElC: Elk	Moderate: slope, floods.	Severe: slope, floods.	Moderate: slope, too clayey, floods.	Moderate: slope, floods.	Fair: slope, too clayey.
FkB: Frankstown	Moderate: depth to rock.	Moderate: depth to rock, seepage, slope.	Severe: depth to rock.	Moderate: depth to rock.	Poor: hard to pack.
FkC: Frankstown	Moderate: depth to rock, slope.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Poor: hard to pack, small stones.
FkD, FkE: Frankstown	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Poor: hard to pack, small stones.
FrB: Frederick	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight	Poor: too clayey, thin layer.
FrC: Frederick	Moderate: slope, percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, thin layer.
FrD: Frederick	Severe: slope.	Severe: slope.	Severe: too clayey.	Severe: slope.	Poor: slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
FrE------------------ Frederick	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: slope.
FsD3----------------- Frederick	Severe: slope.	Severe: slope.	Severe: too clayey.	Severe: slope.	Poor: slope.
FvE*:					
Frederick-----------	Severe: slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: slope.
Nolichucky----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
GaF*:					
Garmon--------------	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage, slope.	Severe: slope, seepage, depth to rock.	Poor: slope, thin layer, area reclaim.
Shelocta------------	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: slope.	Poor: slope.
LoF*:					
Lowell--------------	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Caneyville----------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, too clayey, hard to pack.
Me------------------- Melvin	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
MgB------------------ Monongahela	Severe: percs slowly, wetness.	Moderate: slope, seepage.	Moderate: wetness.	Moderate: wetness.	Fair: thin layer, wetness.
Mh------------------- Morehead	Severe: wetness.	Severe: floods, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
MoB------------------ Mountview	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight------------	Poor: hard to pack.
MoC------------------ Mountview	Moderate: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: hard to pack.
NdC------------------ Needmore	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, hard to pack.
Ne------------------- Newark	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
NhD: Nolichucky	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
No: Nolin	Severe: floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Fair: too clayey.
OtA: Otwell	Severe: wetness, percs slowly.	Slight: wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, thin layer.
OtB: Otwell	Severe: wetness, percs slowly.	Moderate: slope, wetness.	Moderate: wetness, too clayey.	Slight	Fair: too clayey, thin layer.
Pt*. Pits					
ReC: Riney	Moderate: depth to rock, slope.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: area reclaim, too clayey, slope.
ReD: Riney	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: slope.
Se: Sensabaugh	Severe: floods.	Severe: seepage, floods.	Severe: floods, seepage, wetness.	Severe: floods, seepage.	Poor: small stones.
ShB: Shelocta	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: small stones.
ShC: Shelocta	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Moderate: slope.	Poor: small stones, slope.
SlD*:					
Shelocta	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: slope.	Poor: slope.
Lenberg	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, too clayey, hard to pack.
Ta: Taft	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ty: Tyler	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Bo-------------------- Bonnie	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
CaC------------------- Caneyville	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
CaE*:				
Caneyville-----------	Poor: area reclaim, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Frederick------------	Poor: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
CoD------------------- Colyer Variant	Poor: area reclaim, low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, thin layer, slope.
DcB------------------- Dickson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, too clayey, area reclaim.
ElB------------------- Elk	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
ElC------------------- Elk	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
FkB, FkC-------------- Frankstown	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
FkD------------------- Frankstown	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
FkE------------------- Frankstown	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
FrB------------------- Frederick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
FrC------------------- Frederick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
FrD------------------- Frederick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey.
FrE------------------- Frederick	Poor: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, too clayey.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
FsD3------------------ Frederick	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
FvE*:				
Frederick------------	Poor: slope, low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Nolichucky-----------	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
GaF*:				
Garmon---------------	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
Shelocta-------------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
LoF*:				
Lowell---------------	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Caneyville-----------	Poor: area reclaim, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Me-------------------- Melvin	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
MgB------------------- Monongahela	Moderate: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clay, small stones.
Mh-------------------- Morehead	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
MoB, MoC-------------- Mountview	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
NdC------------------- Needmore	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, thin layer.
Ne-------------------- Newark	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
NhD------------------- Nolichucky	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
No-------------------- Nolin	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
OtA, OtB-------------- Otwell	Severe: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Pt*. Pits				
ReC: Riney	Fair: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
ReD: Riney	Fair: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Se: Sensabaugh	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
ShB, ShC: Shelocta	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
SlD*:				
Shelocta	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Lenberg	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Ta: Taft	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: wetness.
Ty: Tyler	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes and levees	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Bo: Bonnie	Moderate: seepage.	Severe: wetness.	Favorable	Erodes easily, wetness.	Wetness, erodes easily.
CaC: Caneyville	Moderate: depth to rock.	Severe: thin layer, hard to pack.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.
CaE*:					
Caneyville	Severe: slope.	Severe: thin layer, hard to pack.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.
Frederick	Severe: slope.	Severe: hard to pack.	Deep to water	Slope	Slope.
CoD: Colyer Variant	Severe: depth to rock, slope.	Severe: thin layer, piping.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
DcB: Dickson	Moderate: seepage.	Moderate: piping.	Percs slowly, slope.	Erodes easily, wetness.	Erodes easily, rooting depth.
ElB: Elk	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Favorable.
ElC: Elk	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope.
FkB: Frankstown	Moderate: seepage, depth to rock.	Moderate: hard to pack.	Deep to water	Favorable	Favorable.
FkC, FkD, FkE: Frankstown	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope	Slope.
FrB: Frederick	Moderate: seepage, slope.	Moderate: hard to pack.	Deep to water	Favorable	Favorable.
FrC: Frederick	Moderate: seepage.	Moderate: hard to pack.	Deep to water	Slope	Slope.
FrD, FrE, FsD3: Frederick	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope	Slope.
FvE*:					
Frederick	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope	Slope.
Nolichucky	Severe: slope.	Slightly	Deep to water	Slope	Slope.
GaF*:					
Garmon	Severe: seepage, slope.	Severe: thin layer, piping.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Shelocta	Severe: slope.	Severe: piping.	Deep to water	Slope	Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes and levees	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
LoF*:					
Lowell	Severe: slope.	Moderate: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Caneyville	Severe: slope.	Severe: thin layer, hard to pack.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Me Melvin	Moderate: seepage.	Severe: piping, wetness.	Floods	Erodes easily, wetness.	Wetness, erodes easily.
MgB Monongahela	Moderate: seepage.	Severe: piping.	Slope, percs slowly.	Percs slowly, erodes easily, rooting depth.	Percs slowly, erodes easily, rooting depth.
Mh Morehead	Moderate: seepage.	Severe: piping, wetness.	Favorable	Erodes easily, wetness.	Wetness, erodes easily.
MoB Mountview	Moderate: seepage.	Moderate: hard to pack.	Deep to water	Erodes easily	Erodes easily.
MoC Mountview	Moderate: seepage.	Moderate: hard to pack.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
NdC Needmore	Moderate: depth to rock.	Moderate: hard to pack.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Ne Newark	Moderate: seepage.	Severe: piping, wetness.	Floods, frost action.	Erodes easily, wetness.	Wetness, erodes easily.
NhD Nolichucky	Moderate: seepage.	Slight	Deep to water	Slope	Slope.
No Nolin	Severe: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily.
OtA Otwell	Slight	Slight	Percs slowly	Erodes easily, rooting depth.	Erodes easily, rooting depth.
OtB Otwell	Slight	Slight	Percs slowly	Erodes easily, rooting depth.	Erodes easily, rooting depth.
Pt*. Pits					
ReC, ReD Riney	Severe: seepage.	Severe: piping.	Deep to water	Slope	Slope.
Se Sensabaugh	Severe: seepage.	Severe: piping.	Deep to water	Favorable	Favorable.
ShB Shelocta	Moderate: seepage.	Severe: piping.	Deep to water	Favorable	Favorable.
ShC Shelocta	Moderate: seepage.	Severe: piping.	Deep to water	Slope	Slope.
SlD*:					
Shelocta	Moderate: seepage.	Severe: piping.	Deep to water	Slope	Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes and levees	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
SlD*:					
Lenberg	Severe: slope.	Moderate: thin layer, hard to pack.	Deep to water	Slope, depth to rock.	Slope, erodes easily.
Ta: Taft	Slight: seepage.	Severe: piping.	Percs slowly	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
Ty: Tyler	Slight	Severe: wetness.	Percs slowly	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Bo---------------- Bonnie	0-8	Silt loam----------	CL	A-4, A-6	0	100	100	95-100	90-100	27-34	8-12
	8-60	Silt loam----------	CL	A-4, A-6	0	100	100	95-100	90-100	27-34	8-12
CaC--------------- Caneyville	0-7	Silt loam----------	ML, CL, CL-ML	A-4, A-6	0-3	90-100	85-100	75-100	60-95	20-35	2-12
	7-12	Silty clay, clay, silty clay loam.	CH, CL	A-7	0-3	90-100	85-100	75-100	65-100	42-70	20-45
	12-26	Clay, silty clay	CH	A-7	0-3	90-100	85-100	75-100	65-100	50-75	30-45
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CaE*: Caneyville-------	0-7	Silt loam----------	ML, CL, CL-ML	A-4, A-6	0-3	90-100	85-100	75-100	60-95	20-35	2-12
	7-12	Silty clay, clay, silty clay loam.	CH, CL	A-7	0-3	90-100	85-100	75-100	65-100	42-70	20-45
	12-26	Clay, silty clay	CH	A-7	0-3	90-100	85-100	75-100	65-100	50-75	30-45
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Frederick--------	0-7	Silt loam----------	ML, CL, CL-ML	A-4, A-6	0-5	80-100	75-100	65-95	60-90	<35	NP-15
	7-61	Silty clay, clay, cherty clay.	CH, CL, MH	A-7	0-5	80-100	75-100	65-100	55-100	45-75	20-40
	61-70	Clay, silty clay	CH, MH	A-7	0-5	90-100	85-100	75-100	65-95	50-85	25-55
CoD--------------- Colyer Variant	0-6	Silt loam----------	ML, CL-ML	A-4	0	80-100	75-100	70-95	65-95	<35	NP-10
	6-12	Silty clay loam	CL, CL-ML	A-6, A-4	0	80-100	75-100	70-95	65-95	25-40	4-15
	12-18	Shaly silty clay loam, silty clay loam.	CL, GC, CL-ML	A-6, A-4	0	55-100	40-100	35-95	30-90	25-40	4-15
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
DcB--------------- Dickson	0-8	Silt loam----------	CL-ML, ML	A-4	0	100	95-100	90-100	75-95	20-28	2-7
	8-26	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	95-100	95-100	85-95	25-38	5-17
	26-38	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	95-100	90-100	85-100	80-95	25-42	7-20
	38-65	Clay, silty clay.	MH, CH, CL	A-6, A-7	0-10	95-100	90-100	80-100	65-95	35-65	12-30
ElB, ElC---------- Elk	0-10	Silt loam----------	ML, CL, CL-ML	A-4	0	95-100	95-100	85-100	70-95	25-35	3-10
	10-40	Silty clay loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0	95-100	90-100	85-100	75-100	25-40	5-15
	40-65	Silty clay loam, silt loam, gravelly silt loam.	ML, CL, CL-ML, SM-SC	A-4, A-6	0	75-100	65-100	50-100	40-95	25-40	5-15
FkB, FkC, FkD, FkE-------------- Frankstown	0-9	Silt loam----------	ML, CL-ML	A-4, A-6	0	85-100	80-100	75-100	70-90	25-40	4-12
	9-34	Silty clay loam, cherty silty clay loam, silt loam.	ML, CL, CH, GC	A-6, A-7	0	60-100	55-100	50-100	45-95	25-50	11-23
	34-45	Cherty silty clay loam, cherty silt loam.	MH, CL, CH, GC	A-6, A-7	0-5	45-100	35-65	35-65	35-65	30-65	11-35
	45	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
FrB, FrC, FrD, FrE-------------- Frederick	0-7	Silt loam--------	ML, CL, CL-ML	A-4, A-6	0-5	80-100	75-100	65-95	60-90	<35	NP-15
	7-61	Silty clay, clay, cherty clay.	CH, CL, MH	A-7	0-5	80-100	75-100	65-100	55-100	45-75	20-40
	61-70	Clay, silty clay	CH, MH	A-7	0-5	90-100	85-100	75-100	65-95	50-85	25-55
FsD3------------- Frederick	0-7	Silty clay loam	ML, CL	A-4, A-6	0-5	80-100	75-100	70-95	50-95	30-45	10-25
	7-55	Silty clay, clay, cherty clay.	CH, CL, MH	A-7	0-5	80-100	75-100	65-100	55-100	45-75	20-40
	55-64	Clay, silty clay	CH, MH	A-7	0-5	90-100	85-100	75-100	65-95	50-85	25-55
FvE*: Frederick-------	0-7	Silt loam--------	ML, CL, CL-ML	A-4, A-6	0-5	80-100	75-100	65-95	60-90	<35	NP-15
	7-61	Silty clay, clay.	CH, CL, MH	A-7	0-5	80-100	75-100	65-100	55-100	45-75	20-40
	61-70	Clay, silty clay	CH, MH	A-7	0-5	90-100	85-100	75-100	65-95	50-85	25-55
Nolichucky------	0-8	Loam-------------	ML, CL, CL-ML, SM	A-4	0	90-100	85-100	60-95	36-85	15-25	3-10
	8-50	Clay loam, sandy clay loam.	CL, SC,	A-6, A-7,	0-5	85-100	80-100	60-95	36-85	35-45	15-22
	50-75	Clay, silty clay.	CL, CH	A-6, A-7	0-5	85-100	80-100	60-95	50-90	38-55	17-30
GaF*: Garmon----------	0-5	Channery silt loam, channery loam.	CL, GC, GM-GC, CL-ML	A-4, A-6	0-10	55-80	50-75	45-75	40-70	25-35	5-15
	5-29	Loam, channery silt loam, channery silty clay loam.	GM-GC, CL-ML, CL	A-4, A-6	0-15	60-85	50-85	45-80	36-70	20-40	5-20
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Shelocta--------	0-4	Gravelly silt loam, silt loam	ML, GM, SM	A-4	0-5	55-95	50-80	40-70	36-65	<35	NP-10
	4-44	Silty clay loam, silt loam, gravelly silty clay loam.	CL, CL-ML, GC, SC	A-6, A-4	0-5	55-95	50-95	45-95	40-90	25-40	4-15
	44-80	Silty clay loam, clay, silty clay.	CH, MH, CL	A-6, A-7,	0-5	85-100	75-95	60-90	55-85	20-60	10-30
LoF*: Lowell----------	0-9	Silt loam--------	ML, CL, CL-ML	A-4	0	100	95-100	90-100	85-100	22-32	4-10
	9-34	Silty clay, clay, silty clay loam.	CL, CH, MH	A-7, A-6	0	100	95-100	90-100	85-100	35-65	15-32
	34-58	Clay, silty clay	CH, MH, CL	A-7	0-10	95-100	90-100	85-100	75-100	45-75	20-40
	58	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Caneyville------	0-7	Silt loam--------	ML, CL, CL-ML	A-4, A-6	0-3	90-100	85-100	75-100	60-95	20-35	2-12
	7-12	Silty clay, clay, silty clay loam.	CH, CL	A-7	0-3	90-100	85-100	75-100	65-100	42-70	20-45
	12-26	Clay, silty clay	CH	A-7	0-3	90-100	85-100	75-100	65-100	50-75	30-45
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Me----------------Melvin	0-10	Silt loam---------	CL, CL-ML, ML	A-4	0	95-100	90-100	80-100	80-95	25-35	4-10
	10-36	Silt loam---------	CL, CL-ML	A-4, A-6	0	95-100	90-100	80-100	80-95	25-40	5-20
	36-65	Silt loam, loam.	CL, CL-ML	A-4, A-6	0	85-100	80-100	70-100	60-95	25-40	5-20
MgB---------------Monongahela	0-9	Silt loam---------	ML, SM, CL-ML, SM-SC	A-4	0	90-100	85-100	75-100	45-90	20-35	1-10
	9-28	Silt loam, silty clay loam.	ML, CL	A-4, A-6	0	90-100	79-100	73-100	70-90	20-40	5-15
	28-58	Silt loam, clay loam.	ML, CL, SM, SC	A-4, A-6	0	80-100	75-100	70-95	45-95	20-40	1-15
	58-96	Silt loam, silty clay loam.	ML, CL, SM, SC	A-4, A-6	0-5	75-100	60-100	60-95	40-95	20-40	1-15
Mh----------------Morehead	0-10	Silt loam---------	ML, CL, CL-ML	A-4	0	95-100	95-100	90-100	80-100	25-35	2-10
	10-52	Silt loam, silty clay loam.	ML, CL	A-4, A-6	0	95-100	95-100	90-100	85-100	25-40	5-20
	52-60	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6	0	90-100	85-100	70-100	60-95	20-40	2-20
MoB, MoC----------Mountview	0-9	Silt loam---------	ML, CL-ML	A-4	0	100	95-100	95-100	85-95	20-30	2-7
	9-37	Silt loam, silty clay loam.	CL, ML	A-6, A-7	0	95-100	95-100	90-100	82-96	30-43	10-20
	37-70	Clay, silty clay, silty clay loam.	CL, ML, MH, CH	A-6, A-7	0-10	75-100	65-100	60-95	50-95	35-65	11-32
NdC---------------Needmore	0-7	Silty clay, silty clay loam.	CL, CH, MH	A-6, A-7	0	95-100	90-100	85-100	80-95	30-55	11-28
	7-24	Silty clay, clay	CL, CH, MH	A-7	0	95-100	90-100	85-100	80-95	43-65	20-35
	24	Weathered bedrock	---	---	---	---	---	---	---	---	---
Ne----------------Newark	0-9	Silt loam---------	ML, CL, CL-ML	A-4	0	95-100	90-100	80-100	55-95	<32	NP-10
	9-28	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6, A-7	0	95-100	90-100	85-100	70-95	22-42	3-20
	28-60	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6, A-7	0	75-100	70-100	65-100	55-95	22-42	3-20
NhD---------------Nolichucky	0-8	Loam--------------	ML, CL, CL-ML, SM	A-4	0	90-100	85-100	60-95	36-85	15-25	3-10
	8-50	Clay loam, sandy clay loam.	CL, SC	A-6, A-7,	0-5	85-100	80-100	60-95	36-85	35-45	15-22
	50-75	Clay, silty clay.	CL, CH	A-6, A-7,	0-5	80-100	75-100	65-95	60-90	38-70	20-40
No----------------Nolin	0-10	Silt loam---------	ML, CL, CL-ML	A-4, A-6	0	100	95-100	90-100	80-100	25-40	5-18
	10-65	Silt loam, silty clay loam.	ML, CL, CL-ML	A-4, A-6, A-7	0	95-100	95-100	85-100	75-100	25-46	5-23
OtA, OtB----------Otwell	0-7	Silt loam---------	CL, CL-ML	A-4, A-6	0	100	100	90-100	70-95	25-35	5-15
	7-20	Silty clay loam, silt loam.	CL, CL-ML	A-4, A-6	0	100	100	90-100	70-95	25-40	5-20
	20-56	Silty clay loam, loam, silt loam.	CL	A-6, A-7	0	95-100	95-100	85-100	65-90	35-50	20-30
	56-75	Silt loam, silty clay loam, gravelly silty clay loam.	CL	A-6, A-7	0	85-100	80-100	70-100	65-95	35-50	15-25
Pt*. Pits											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
ReC, ReD: Riney	0-8	Loam	CL, ML, SM, SC	A-4	0	90-100	85-100	65-80	35-75	<30	NP-10
	8-50	Clay loam, sandy clay loam.	ML, CL, SC, SM-SC	A-6, A-2, A-4	0	80-100	70-100	70-85	25-75	20-35	2-15
	50	Weathered bedrock	---	---	---	---	---	---	---	---	---
Se: Sensabaugh	0-10	Gravelly silt loam.	CL-ML, CL, ML, SM	A-4	0-18	75-90	65-75	55-65	40-55	16-29	3-9
	10-32	Gravelly silt loam.	SM-SC, SC, GM-GC, CL-ML	A-4, A-6	0-10	70-90	45-75	45-65	35-55	22-36	6-15
	32-60	Very gravelly silt loam, silt loam.	SM-SC, SC, GM-GC, GC	A-4, A-6, A-2	5-20	55-90	25-75	25-65	20-55	20-36	6-15
ShB, ShC: Shelocta	0-4	Silt loam, gravelly silt loam.	ML, CL-ML	A-4	0-5	80-95	75-95	60-95	55-90	<35	NP-10
	4-44	Silty clay loam, gravelly silt loam, gravelly silty clay loam.	CL, CL-ML, GC, SC	A-6, A-4	0-10	55-95	50-95	45-95	40-90	25-40	4-15
	44-80	Silty clay loam, silty clay, clay	CH, MH, CL	A-4, A-6,	0-15	85-100	75-95	60-90	55-85	20-60	10-30
SlD*: Shelocta	0-4	Gravelly silt loam, silt loam.	ML, GM, SM	A-4	0-5	55-95	50-80	40-70	36-65	<35	NP-10
	4-44	Silty clay loam, gravelly silt loam, gravelly silty clay loam.	CL, CL-ML, GC, SC	A-6, A-4	0-10	55-95	50-95	45-95	40-90	25-40	4-15
	44-80	Silty clay loam, clay.	CH, MH, CL	A-4, A-6	0-15	85-100	75-95	60-90	55-85	20-60	10-30
Lenberg	0-10	Clay, silty clay loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0-5	75-100	75-100	75-95	56-90	20-35	2-12
	10-20	Gravelly silty clay loam, silty clay, clay.	CL, CH	A-6, A-7	0-5	75-100	75-100	75-95	60-90	35-70	15-40
	20-36	Silty clay, clay	CL, CH	A-7	0-10	75-100	75-100	75-95	60-90	45-70	20-40
	36	Weathered bedrock	---	---	---	---	---	---	---	---	---
Ta: Taft	0-10	Silt loam	CL-ML, ML	A-4	0	100	95-100	90-100	75-95	18-30	2-10
	10-24	Silt loam, silty clay, loam.	CL-ML, CL	A-4, A-6	0	100	95-100	95-100	85-95	23-38	5-16
	24-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6, A-7	0	95-100	90-100	85-100	80-95	23-42	5-20
Ty: Tyler	0-9	Silt loam	ML	A-4	0	100	100	95-100	80-95	30-40	4-10
	9-20	Silty clay loam, silt loam.	CL	A-6, A-7, A-4	0	100	100	95-100	85-100	25-45	8-20
	20-64	Silty clay loam, silt loam.	CL	A-6, A-7, A-4	0	100	100	80-100	70-95	25-45	8-20

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than. Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T
	In	In/hr	In/in	pH			
Bo------------------ Bonnie	0-8	0.6-2.0	0.22-0.24	6.6-7.3	Low------------	0.43	5
	8-60	0.2-2.0	0.20-0.22	4.5-5.5	Low------------	0.43	
CaC---------------- Caneyville	0-7	0.6-2.0	0.15-0.22	4.5-7.3	Low------------	0.43	3
	7-12	0.2-0.6	0.12-0.18	4.5-7.3	Moderate-------	0.28	
	12-26	0.2-0.6	0.12-0.18	5.6-7.8	Moderate-------	0.28	
	26	---	---	---	---------------	----	
CaE*:							
Caneyville------	0-7	0.6-2.0	0.15-0.22	4.5-7.3	Low------------	0.43	3
	7-12	0.2-0.6	0.12-0.18	4.5-7.3	Moderate-------	0.28	
	12-26	0.2-0.6	0.12-0.18	5.6-7.8	Moderate-------	0.28	
	26	---	---	---	---------------	----	
Frederick-------	0-7	2.0-6.0	0.15-0.24	4.5-6.0	Low------------	0.32	4
	7-61	0.6-2.0	0.09-0.18	4.5-5.5	Moderate-------	0.24	
	61-70	0.6-2.0	0.09-0.20	4.5-5.5	Moderate-------	0.24	
CoD---------------- Colyer Variant	0-6	0.6-2.0	0.17-0.23	3.6-5.5	Low------------	0.32	2
	6-12	0.6-2.0	0.16-0.22	3.6-5.5	Low------------	0.28	
	12-18	0.6-2.0	0.12-0.22	3.6-5.5	Low------------	0.28	
	18	---	---	---	---------------	----	
DcB---------------- Dickson	0-8	0.6-2.0	0.18-0.22	4.5-5.5	Low------------	0.43	3
	8-26	0.6-2.0	0.18-0.20	4.5-5.5	Low------------	0.43	
	26-38	0.06-0.6	0.05-0.11	4.5-5.5	Low------------	0.43	
	38-65	0.2-0.6	0.02-0.04	4.5-5.5	Moderate-------	0.28	
ElB, ElC---------- Elk	0-10	0.6-2.0	0.19-0.23	4.5-6.5	Low------------	0.32	4
	10-40	0.6-2.0	0.18-0.22	4.5-6.0	Low------------	0.28	
	40-65	0.6-2.0	0.14-0.20	5.1-6.0	Low------------	0.28	
FkB, FkC, FkD, FkE-------------- Frankstown	0-9	0.6-2.0	0.18-0.22	5.1-6.0	Low------------	0.32	3
	9-34	0.6-2.0	0.14-0.20	4.5-6.0	Moderate-------	0.28	
	34-45	0.6-2.0	0.12-0.16	4.5-6.0	Moderate-------	0.28	
	45	---	---	---	---------------	----	
FrB, FrC, FrD, FrE-------------- Frederick	0-7	2.0-6.0	0.15-0.24	4.5-6.0	Low------------	0.32	4
	7-61	0.6-2.0	0.09-0.18	4.5-5.5	Moderate-------	0.24	
	61-70	0.6-2.0	0.09-0.20	4.5-5.5	Moderate-------	0.24	
FsD3-------------- Frederick	0-7	0.6-2.0	0.15-0.20	4.5-6.0	Low------------	0.32	4
	7-55	0.6-2.0	0.09-0.18	4.5-5.5	Moderate-------	0.24	
	55-64	0.6-2.0	0.09-0.20	4.5-5.5	Moderate-------	0.24	
FvE*:							
Frederick-------	0-7	2.0-6.0	0.15-0.24	4.5-6.0	Low------------	0.32	4
	7-61	0.6-2.0	0.09-0.18	4.5-5.5	Moderate-------	0.24	
	61-70	0.6-2.0	0.09-0.20	4.5-5.5	Moderate-------	0.24	
Nolichucky------	0-8	0.6-2.0	0.18-0.22	4.5-6.5	Low------------	0.24	5
	8-50	0.6-2.0	0.09-0.17	4.5-5.5	Low------------	0.20	
	50-75	0.6-2.0	0.07-0.15	4.5-5.5	Moderate-------	0.20	
GaF*:							
Garmon-----------	0-5	2.0-6.0	0.05-0.16	4.5-7.3	Low------------	0.28	3
	5-29	2.0-6.0	0.05-0.16	4.5-7.3	Low------------	0.28	
	29	---	---	---	---------------	----	
Shelocta--------	0-7	0.6-2.0	0.10-0.18	4.5-5.5	Low------------	0.28	4
	7-44	0.6-2.0	0.10-0.20	4.5-5.5	Low------------	0.28	
	44-80	0.6-6.0	0.08-0.16	4.5-5.5	Low------------	0.17	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
LoF*:							
Lowell	0-9	0.6-2.0	0.18-0.23	5.6-6.5	Low	0.37	3
	9-34	0.2-2.0	0.13-0.19	5.6-6.5	Moderate	0.28	
	34-58	0.2-0.6	0.12-0.17	5.6-7.8	Moderate	0.28	
	58	---	---	---	---	----	
Caneyville	0-7	0.6-2.0	0.15-0.22	4.5-7.3	Low	0.43	3
	7-12	0.2-0.6	0.12-0.18	4.5-7.3	Moderate	0.28	
	12-26	0.2-0.6	0.12-0.18	5.6-7.8	Moderate	0.28	
	26	---	---	---	---	----	
Me Melvin	0-10	0.6-2.0	0.18-0.23	5.6-7.3	Low	0.43	5
	10-36	0.6-6.0	0.18-0.23	5.6-7.3	Low	0.43	
	36-65	0.6-2.0	0.16-0.23	5.6-7.3	Low	0.43	
MgB Monongahela	0-9	0.6-2.0	0.18-0.24	4.5-5.5	Low	0.43	3
	9-28	0.6-2.0	0.14-0.18	4.5-5.5	Low	0.43	
	28-58	0.06-0.6	0.08-0.12	4.5-5.5	Low	0.43	
	58-96	0.2-0.6	0.08-0.12	4.5-5.5	Low	0.43	
Mh Morehead	0-10	0.6-2.0	0.19-0.23	4.5-5.5	Low	0.37	4-3
	10-52	0.6-2.0	0.18-0.22	4.5-5.5	Low	0.43	
	52-60	0.6-2.0	0.15-0.22	4.5-5.5	Low	0.43	
MoB, MoC Mountview	0-9	0.6-2.0	0.18-0.22	4.5-5.5	Low	0.43	5
	9-37	0.6-2.0	0.17-0.20	4.5-5.5	Low	0.43	
	37-70	0.6-2.0	0.10-0.15	4.5-5.5	Moderate	0.32	
NdC Needmore	0-7	0.2-2.0	0.14-0.18	4.5-6.5	Moderate	0.32	3
	7-24	0.2-0.6	0.14-0.17	4.5-6.0	Moderate	0.24	
	24	---	---	---	---	----	
Ne Newark	0-9	0.6-2.0	0.15-0.23	5.6-7.3	Low	0.43	5
	9-28	0.6-2.0	0.18-0.23	5.6-7.3	Low	0.43	
	28-60	0.6-2.0	0.15-0.22	5.6-7.3	Low	0.43	
NhD Nolichucky	0-8	0.6-2.0	0.18-0.22	4.5-6.5	Low	0.24	5
	8-50	0.6-2.0	0.09-0.17	4.5-5.5	Low	0.20	
	50-75	0.6-2.0	0.07-0.15	4.5-5.5	Moderate	0.20	
No Nolin	0-10	0.6-2.0	0.18-0.23	5.6-7.3	Low	0.43	5
	10-65	0.6-2.0	0.18-0.23	5.6-7.3	Low	0.43	
OtA, OtB Otwell	0-7	0.6-2.0	0.22-0.24	4.5-6.5	Low	0.43	3
	7-20	0.6-2.0	0.18-0.22	4.5-5.5	Low	0.43	
	20-56	<0.06	0.06-0.08	4.5-5.5	Low	0.43	
	56-75	0.06-0.2	0.19-0.21	4.5-5.5	Low	0.43	
Pt*. Pits							
ReC, ReD Riney	0-8	2.0-6.0	0.12-0.18	4.5-6.5	Low	0.28	4
	8-50	2.0-6.0	0.13-0.17	4.5-5.5	Low	0.28	
	50	---	---	---	---	----	
Se Sensabaugh	0-10	0.6-6.0	0.10-0.16	5.6-7.3	Low	0.20	5
	10-32	0.6-6.0	0.10-0.15	5.6-7.3	Low	0.20	
	32-60	0.6-6.0	0.08-0.14	5.6-7.3	Low	0.20	
ShB, ShC Shelocta	0-7	0.6-2.0	0.16-0.22	4.5-5.5	Low	0.32	4
	7-44	0.6-2.0	0.10-0.20	4.5-5.5	Low	0.28	
	44-80	0.6-6.0	0.08-0.16	4.5-5.5	Low	0.17	
SlD*:							
Shelocta	0-7	0.6-2.0	0.10-0.18	4.5-5.5	Low	0.32	4
	7-44	0.6-2.0	0.10-0.20	4.5-5.5	Low	0.28	
	44-80	0.6-6.0	0.08-0.16	4.5-5.5	Low	0.17	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
SlD*:							
Lenberg----------	0-10	0.6-2.0	0.18-0.23	4.5-7.3	Low-------------	0.43	3
	10-20	0.2-0.6	0.17-0.19	4.5-5.5	Moderate--------	0.37	
	20-36	0.2-0.6	0.11-0.18	4.5-5.5	Moderate--------	0.37	
	36	---	---	---	---------------	----	
Ta---------------- Taft	0-10	0.6-2.0	0.20-0.22	4.5-5.5	Low-------------	0.43	3
	10-24	0.6-2.0	0.18-0.20	4.5-5.5	Low-------------	0.43	
	24-60	0.06-0.2	0.03-0.07	4.5-5.5	Low-------------	0.43	
Ty---------------- Tyler	0-9	0.6-2.0	0.18-0.22	4.5-6.5	Low-------------	0.43	3
	9-20	0.2-0.6	0.16-0.20	4.5-5.5	Low-------------	0.43	
	20-64	<0.2	0.04-0.12	4.5-5.5	Low-------------	0.43	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the text explain terms such as "rare," "brief," "apparent," and "perched." The symbol > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydro- logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard- ness	Uncoated steel	Concrete
					Ft			In			
Bo---------------- Bonnie	C/D	None---------	---	---	0-1.0	Apparent	Mar-Jun	>60	---	High------	High.
CaC--------------- Caneyville	C	None---------	---	---	>6.0	---	---	20-40	Hard	High------	Moderate.
CaE*: Caneyville--------	C	None---------	---	---	>6.0	---	---	20-40	Hard	High------	Moderate.
Frederick---------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	High.
CoD--------------- Colyer Variant	D	None---------	---	---	>6.0	---	---	8-20	Hard	High------	High.
DcB--------------- Dickson	C	None---------	---	---	2.0-3.0	Perched	Jan-Apr	>60	---	Moderate	Moderate.
ElB, ElC---------- Elk	B	Rare---------	Brief------	Jan-Apr	>6.0	---	---	>60	---	Moderate	Moderate.
FkB, FkC, FkD, FkE-------------- Frankstown	B	None---------	---	---	>6.0	---	---	>40	Hard	Moderate	Moderate.
FrB, FrC, FrD, FrE, FsD3--------- Frederick	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	High.
FvE*: Frederick---------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	High.
Nolichucky--------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
GaF*: Garmon------------	C	None---------	---	---	>6.0	---	---	20-40	Hard	Low-------	Moderate.
Shelocta----------	B	None---------	---	---	>6.0	---	---	>60	---	Low-------	High.
LoF*: Lowell------------	C	None---------	---	---	>6.0	---	---	>40	Hard	High------	Moderate.
Caneyville--------	C	None---------	---	---	>6.0	---	---	20-40	Hard	High------	Moderate.
Me---------------- Melvin	D	Occasional	Brief------	Dec-May	0-1.0	Apparent	Dec-May	>60	---	High------	Low.
MgB--------------- Monongahela	C	None---------	---	---	1.5-3.0	Perched	Dec-Apr	>60	---	High------	High.
Mh---------------- Morehead	C	Rare---------	---	---	0.5-1.5	Apparent	Jan-Apr	>60	---	Moderate	High.
MoB, MoC---------- Mountview	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
NdC--------------- Needmore	C	None---------	---	---	>6.0	---	---	20-40	Soft	High------	Moderate.
Ne---------------- Newark	C	Occasional	Brief------	Jan-Apr	0.5-1.5	Apparent	Dec-May	>60	---	High------	Low.
NhD--------------- Nolichucky	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
No----------------- Nolin	B	Occasional	Brief to long.	Feb-May	3.0-6.0	Apparent	Feb-Mar	>60	---	Low------	Moderate.
OtA, OtB---------- Otwell	C	None---------	---	---	1.5-2.5	Perched	Jan-Apr	>60	---	Moderate	High.
Pt*. Pits											
ReC, ReD---------- Riney	B	None---------	---	---	>6.0	---	---	>48	Soft	Moderate	High.
Se----------------- Sensabaugh	B	Occasional	Very brief	Jan-Apr	4.0-6.0	Apparent	Jan-Apr	>60	---	Low------	Low.
ShB, ShC---------- Shelocta	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High.
SlD*:											
Shelocta----------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High.
Lenberg-----------	C	None---------	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate.
Ta----------------- Taft	C	None---------	---	---	1.0-2.0	Perched	Jan-Apr	>60	---	High-----	High.
Ty----------------- Tyler	D	None---------	---	---	0.5-2.0	Perched	Nov-May	>60	---	High-----	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--ENGINEERING INDEX TEST DATA

Soil name, report number, horizon, and depth in inches	Classification		Grain size distribution										Liquid limit	Plasticity index	Moisture density		California bearing ratio		Specific gravity
			Percentage passing sieve							Percentage smaller than--									
	AASHTO	Unified	2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Max. dry density	Optimum moisture	Soaked	Un-soaked	
													Pct		Lb/ft^3	Pct			
Dickson sil:[1]																			
(76KY-217-6)																			
B21t--10 to 21	A-6(13)	CL	100	100	100	100	99	96	90	71	36	25	33	15	108	16	---	---	2.68
B'x---27 to 60	A-4(7)	CL	100	100	100	100	99	94	83	63	31	21	30	10	112	15	---	---	2.70
Frederick sil:[2]																			
(75KY-217-4)																			
B21t--15 to 22	A-7-6(40)	CH	100	100	100	99	98	97	94	78	65	56	65	37	95	21	---	---	2.71
B22t--40 to 54	A-7-6(36)	CH	100	99	97	96	95	93	91	77	61	51	64	35	94	24	---	---	2.73
Monongahela sil:[3]																			
(76KY-217-8)																			
B21t-- 9 to 20	A-6(7)	CL	100	100	97	90	79	73	71	52	26	18	34	11	110	16	30	44	2.66
Bx2---38 to 58	A-6(12)	CL	100	98	95	92	86	82	79	60	34	26	39	15	106	18	14	38	2.69
Bx4---76 to 96	A-6(12)	CL	100	100	100	100	99	98	92	66	28	20	35	13	104	16	9	42	2.67
Mountview sil:[4]																			
(75KY-087-1)																			
B21t----17 to 24	A-6(14)	CL	100	100	100	99	97	95	82	66	39	33	35	18	112	19	---	---	2.72
IIB23t--49 to 59	A-7-6(10)	ML	100	100	99	99	98	97	71	64	56	51	43	15	98	25	---	---	2.70
Mountview sil:[5]																			
(75KY-217-3)																			
B21t--- 8 to 14	A-6(14)	CL	100	100	100	100	100	99	96	77	39	29	38	14	105	17	---	---	2.67
IIB26t-46 to 56	A-7-6(19)	CL	100	100	100	100	99	95	88	73	48	38	44	19	103	21	---	---	2.71

[1]Dickson silt loam:
In Taylor County, 0.4 miles west of Saloma and 6.0 miles north of Campbellsville, on the south side of Kentucky State Highway 744 in a hay field. This is not the typical pedon.

[2]Frederick silt loam:
In Taylor County, about 6 miles northwest of Campbellsville and about 7,000 feet southwest of Saloma, about 150 yards east of a county road in a cultivated field. The horizons were subdivided for sampling purposes.

[3]Monongahela silt loam:
In Taylor County, about 10 miles northeast of Campbellsville and about 1.5 miles northeast of Mannsville, about 50 yards north of Kentucky State Highway 337 in a cultivated field.

[4]Mountview silt loam:
In Green County, about 8 miles northwest of Greensburg and about 3 miles north of Summersville, about 6,000 feet southwest of Sand Lick Church in a cultivated field. The horizons were subdivided for sampling purposes.

[5]Mountview silt loam:
In Taylor County, about 3.8 miles northwest of Campbellsville and 300 feet east of Kentucky State Highway 527. This is not the typical pedon.

TABLE 18.--PHYSICAL ANALYSIS OF SELECTED SOILS

[A dash indicates material was not detected. An asterisk indicates the determination was not made]

Soil name, report number, horizon[1], and depth in inches	Total: Sand (2-0.05)	Total: Silt (0.05-0.002)	Total: Int. IV Clay (<0.002)	Size class and particle diameter (mm): Sand: Very coarse (2-1)	Sand: Coarse (1-0.5)	Sand: Medium (0.5-0.25)	Sand: Fine (0.25-0.1)	Sand: Very fine (0.1-0.05)	Sand coarser than very fine (2-0.1)	Very fine sand plus silt (0.1-0.002)	Textural class	Coarse fragments: >2 mm	Coarse fragments: 2-19 mm	Coarse fragments: 19-76 mm
	Pct <2 mm											Pct	Pct	Pct
Frederick silt loam: (75KY-217-4)														
Ap---------------- 0-7	14.0	62.3	23.7	1.3	1.9	2.6	4.2	4.0	10.0	66.3	silt loam	13.4	7.6	6.8
B21t-------------- 7-15	4.5	42.5	53.0	0.1	0.4	0.7	1.4	1.9	2.6	44.4	silty clay	1.3	1.3	---
B21t--------------15-22	4.7	37.2	58.1	0.2	0.4	0.5	1.0	2.6	2.0	39.8	clay	3.8	2.4	1.4
B22t--------------22-40	5.9	43.0	51.1	0.2	0.6	0.6	1.5	3.0	2.9	46.0	silty clay	1.3	1.3	---
B22t--------------40-54	6.1	40.2	53.7	0.4	0.9	0.7	1.5	2.6	3.5	42.8	silty clay-clay	12.9	3.6	9.3
B23t--------------54-61	3.5	39.5	57.0	0.1	0.2	0.4	1.1	1.7	1.8	41.2	clay-silty clay	17.1	2.1	15.0
C-----------------61-70	3.7	42.9	53.4	0.2	0.6	0.5	0.7	1.7	2.0	44.6	silty clay	21.3	12.4	8.9
Garmon loam: (75KY-217-1)														
A1---------------- 0-2	29.6	58.6	11.8	3.3	2.0	1.1	2.8	20.4	9.2	79.0	silt loam	17.7	6.4	11.3
A2---------------- 2-5	26.8	59.4	13.8	2.2	2.1	1.1	2.7	18.7	8.1	78.1	silt loam	9.1	7.8	1.3
B21--------------- 5-14	27.2	58.9	13.9	1.4	1.6	0.9	2.8	20.5	6.7	79.4	silt loam	9.7	5.0	4.7
B22---------------14-29	27.3	55.9	16.8	2.7	2.0	1.0	2.9	18.7	8.6	74.6	channery silt loam	21.0	10.3	10.7
Monongahela silt loam: (76KY-217-8)														
Ap---------------- 0-9	12.2	70.9	16.9	4.9	2.6	1.4	1.6	1.7	10.5	72.6	silt loam	9.7	*	*
B21t-------------- 9-20	13.0	64.7	22.3	5.3	2.8	1.4	1.6	1.9	11.1	66.6	silt loam	12.9	*	*
B22t--------------20-28	15.1	65.9	19.0	6.1	3.0	1.5	1.9	2.6	12.5	68.5	silt loam	16.2	*	*
Bx1---------------28-38	12.0	68.0	20.0	3.8	2.1	1.2	1.8	3.1	8.9	71.1	silt loam	10.6	*	*
Bx2---------------38-58	14.4	58.3	27.3	4.9	2.2	1.3	2.0	4.0	10.0	62.3	silty clay loam-	10.7	*	*
											silt loam		*	*
Bx3---------------58-76	16.0	62.7	21.3	2.5	2.0	1.7	3.3	6.5	9.5	69.2	silt loam	2.3	*	*
Bx4---------------76-90	11.2	67.8	21.0	0.9	1.0	1.0	2.3	6.0	5.2	73.8	silt loam	0.5	*	*
Mountview silt loam: (75KY-87-1)														
Ap---------------- 0-9	14.0	65.2	20.8	0.2	1.0	3.3	6.2	3.3	10.7	68.5	silt loam	0.3	0.3	---
B21t-------------- 9-17	15.0	55.8	29.2	0.3	1.1	3.2	6.4	4.0	11.0	59.8	silt clay loam	1.2	1.2	---
B21t--------------17-24	18.0	53.8	28.2	0.2	1.0	4.0	7.9	4.9	13.1	58.7	silty clay loam	1.4	1.4	---
B22t--------------24-37	17.7	51.2	31.1	0.4	1.1	3.5	7.7	5.0	12.7	56.2	silty clay loam	3.4	1.2	2.2
IIB23t------------37-49	27.7	20.9	51.4	0.8	1.1	2.9	15.4	7.5	20.2	28.4	clay	0.7	0.3	0.4
IIB23t------------49-59	22.4	22.7	54.9	0.2	0.6	2.4	12.5	6.7	15.7	29.4	clay	0.3	0.3	---
IIB24t------------59-70	19.2	22.5	58.3	0.2	0.5	1.9	9.5	7.1	12.1	29.6	clay	2.9	1.8	1.1
Shelocta silt loam: (76KY-217-10)														
Ap---------------- 0-4	22.9	61.6	15.5	6.0	3.5	1.7	2.7	9.0	13.9	70.6	silt loam	16.3	*	*
B1---------------- 4-13	18.6	57.8	23.6	5.8	2.9	1.5	2.2	6.2	12.4	64.0	gravelly silt loam	24.0	*	*
B21t--------------13-26	4.7	57.9	37.4	1.1	0.7	0.4	0.6	1.9	2.8	59.8	silty clay loam	---	---	---
B22t--------------26-34	25.6	50.6	23.8	8.2	5.1	2.6	3.2	6.5	19.1	57.1	gravelly silt loam	30.0	*	*
B23t--------------34-44	16.6	53.0	30.4	4.5	2.4	1.2	2.1	6.4	10.2	59.4	silty clay loam	8.7	*	*
IIB24t------------44-64	6.4	55.8	37.8	1.6	0.9	0.4	0.8	2.7	3.7	58.5	silty clay loam	0.8	*	*
IIB3--------------64-80	3.4	55.2	41.4	0.9	0.6	0.3	0.6	1.0	2.4	56.2	silty clay	0.6	*	*

[1]The B22t horizon in Frederick silt loam and B23t horizon in Mountview silt loam have been subdivided for sampling purposes.

TABLE 19.--CHEMICAL ANALYSIS OF SELECTED SOILS

Soil name, report number, horizon[1], and depth in inches	pH		Extractable bases					Cation exchange capacity		Extractable acidity	Aluminum	Base saturation		Organic matter	Calcium carbonate equivalent	Phosphorus
	H_2O (1:1)	KCl 1N (1:1)	Ca	Mg	K	Na	Sum of bases	Ammonium acetate	SUM			Ammonium acetate	SUM			
			Milliequivalents per 100 grams of soil										Pct	Pct	Pct	Ppm
Frederick silt loam: (75KY-217-4)																
Ap--------------- 0-7	5.9	5.1	4.54	0.54	0.28	0.03	5.39	9.17	11.95	6.56	0.1	58	45	2.92	0.27	3.7
B21t------------- 7-15	5.7	4.3	7.18	2.90	0.20	0.05	10.33	15.99	18.25	7.92	0.2	65	57	0.71	0.24	0.45
B21t-------------15-22	5.1	3.6	5.75	3.74	0.21	0.05	9.75	18.46	21.95	12.20	1.3	53	44	0.46	0.23	0.4
B22t-------------22-40	5.1	3.5	4.13	2.26	0.22	0.05	6.66	16.07	18.86	12.20	1.7	41	35	0.34	0.24	0.25
B22t-------------40-54	5.0	3.5	3.61	2.17	0.27	0.04	6.09	16.46	18.93	12.84	1.5	37	32	0.37	0.30	0.35
B23t-------------54-61	4.8	3.3	2.43	1.73	0.27	0.02	4.45	18.74	21.09	16.64	3.4	23	21	0.23	0.31	0.3
C----------------61-70	4.8	3.4	2.06	1.29	0.25	0.03	3.63	16.78	19.07	15.44	4.3	21	19	0.19	0.26	0.45
Garmon silt loam: (75KY-217-1)																
A1--------------- 0-2	4.6	3.4	0.58	0.44	0.14	0.02	1.18	6.55	9.50	8.32	1.08	18	12	2.34	0.41	2.1
A2--------------- 2-5	4.8	3.6	0.68	0.51	0.11	---	1.30	5.39	7.50	6.20	0.73	24	17	1.27	0.29	1.9
B21-------------- 5-14	5.5	3.9	1.42	1.31	0.08	0.04	2.85	9.94	6.33	3.48	0.32	29	45	0.57	0.23	1.0
B22--------------14-29	5.9	4.3	2.05	2.23	0.08	0.06	4.42	6.20	7.30	2.88	0.17	71	60	0.36	0.23	1.0
Monongahela silt loam: (76KY-217-8)																
Ap--------------- 0-9	5.3	4.1	4.23	0.57	0.26	0.06	5.12	9.32	15.69	10.57	0.10	55	33	4.00	0.54	4.6
B21t------------- 9-20	4.7	3.6	0.90	0.51	0.23	0.04	1.68	8.71	12.96	11.28	0.29	19	13	0.65	0.33	0.7
B22t-------------20-28	4.8	3.5	0.50	0.68	0.20	0.04	1.42	8.00	10.84	9.42	0.40	18	13	0.40	0.24	0.5
Bx1--------------28-38	4.8	3.3	---	0.74	0.15	0.04	0.93	7.96	11.21	10.28	0.39	12	8	0.15	0.26	0.3
Bx2--------------38-58	4.6	3.2	---	1.02	0.13	0.90	2.05	11.07	11.62	9.57	0.44	19	18	0.08	0.23	0.3
Bx3--------------58-76	4.5	3.1	---	1.08	0.10	0.90	2.08	9.14	11.22	9.14	0.54	23	19	0.07	0.37	0.4
Bx4--------------76-90	4.6	3.0	---	1.43	0.10	0.13	1.66	8.82	9.66	8.00	0.52	19	17	0.08	0.32	0.4
Mountview silt loam: (75KY-87-1)																
Ap--------------- 0-9	5.2	4.2	2.75	0.72	0.36	0.01	3.84	7.46	10.76	6.92	0.28	51	36	1.43	0.22	60.0
B21t------------- 9-17	4.8	3.7	2.40	1.12	0.25	0.02	3.79	9.60	12.91	9.12	0.70	39	29	0.45	0.13	1.0
B21t-------------17-24	4.7	3.6	1.79	1.46	0.22	---	3.47	8.50	11.95	8.48	0.86	41	29	0.22	0.15	0.9
B22t-------------24-37	4.8	3.5	1.33	1.39	0.18	---	2.90	9.28	12.22	9.32	1.18	31	24	0.18	0.16	0.75
B23t-------------37-49	4.9	3.6	1.43	2.0	0.24	0.01	3.68	12.60	15.68	12.00	1.18	29	23	0.12	0.18	0.75
B23t-------------49-59	4.8	3.5	1.43	2.45	0.23	0.02	4.13	12.85	16.41	12.28	1.24	32	25	0.21	0.17	0.7
B24t-------------59-70	4.9	3.6	1.52	2.85	0.25	---	4.62	24.56	16.62	12.00	1.34	19	28	0.21	0.25	0.7
Shelocta silt loam: (76KY-217-10)																
Ap--------------- 0-4	4.8	3.5	1.25	0.55	0.17	0.02	1.99	8.14	13.41	11.42	0.28	24	15	2.51	0.15	1.7
B1--------------- 4-13	5.0	3.5	1.65	0.75	0.15	0.02	2.57	8.82	14.99	12.42	0.23	29	17	0.88	0.16	0.4
B21t-------------13-26	5.1	3.4	5.20	2.85	0.33	0.04	8.42	15.49	22.13	13.71	0.31	54	38	0.46	0.22	0.6
B22--------------26-34	5.1	3.5	2.20	2.09	0.26	0.04	4.59	10.71	16.58	11.99	0.19	43	28	0.25	0.22	0.3
B23t-------------34-44	5.0	3.4	1.78	2.64	0.26	0.04	4.72	11.49	18.00	13.28	0.13	41	26	0.20	0.16	0.3
IIB24t-----------44-64	5.0	3.2	0.65	2.90	0.26	0.06	3.87	16.28	23.00	19.13	0.58	24	17	0.17	0.16	0.1
IIB3-------------64-80	5.0	2.9	1.23	6.14	0.26	0.26	7.89	21.63	28.17	20.28	0.97	36	28	0.15	0.25	0.4

[1]The B22t horizon in Frederick silt loam and the B23t horizon in Mountview silt loam have been subdivided for sampling purposes.

TABLE 20.--CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series]

Soil name	Family or higher taxonomic class
Bonnie	Fine-silty, mixed, acid, mesic Typic Fluvaquents
Caneyville	Fine, mixed, mesic Typic Hapludalfs
Colyer Variant	Loamy, mixed, mesic Lithic Dystrochrepts
*Dickson	Fine-silty, siliceous, thermic Glossic Fragiudults
Elk	Fine-silty, mixed, mesic Ultic Hapludalfs
Frankstown	Fine-loamy, mixed, mesic Typic Hapludults
Frederick	Clayey, mixed, mesic Typic Paleudults
*Garmon	Fine-loamy, mixed, mesic Dystric Eutrochrepts
Lenberg	Fine, mixed, mesic Ultic Hapludalfs
*Lowell	Fine, mixed, mesic Typic Hapludalfs
Melvin	Fine-silty, mixed, nonacid, mesic Typic Fluvaquents
Monongahela	Fine-loamy, mixed, mesic Typic Fragiudults
Morehead	Fine-silty, mixed, mesic Aquic Hapludults
*Mountview	Fine-silty, siliceous, thermic Typic Paleudults
Needmore	Fine, mixed, mesic Ultic Hapludalfs
Newark	Fine-silty, mixed, nonacid, mesic Aeric Fluvaquents
*Nolichucky	Fine-loamy, siliceous, mesic Typic Paleudults
Nolin	Fine-silty, mixed, mesic Dystric Fluventic Eutrochrepts
Otwell	Fine-silty, mixed, mesic Typic Fragiudalfs
Riney	Fine-loamy, siliceous, mesic Typic Hapludults
Sensabaugh	Fine-loamy, mixed, mesic Dystric Fluventic Eutrochrepts
Shelocta	Fine-loamy, mixed, mesic Typic Hapludults
*Taft	Fine-silty, siliceous, thermic Glossaquic Fragiudults
Tyler	Fine-silty, mixed, mesic Aeric Fragiaquults

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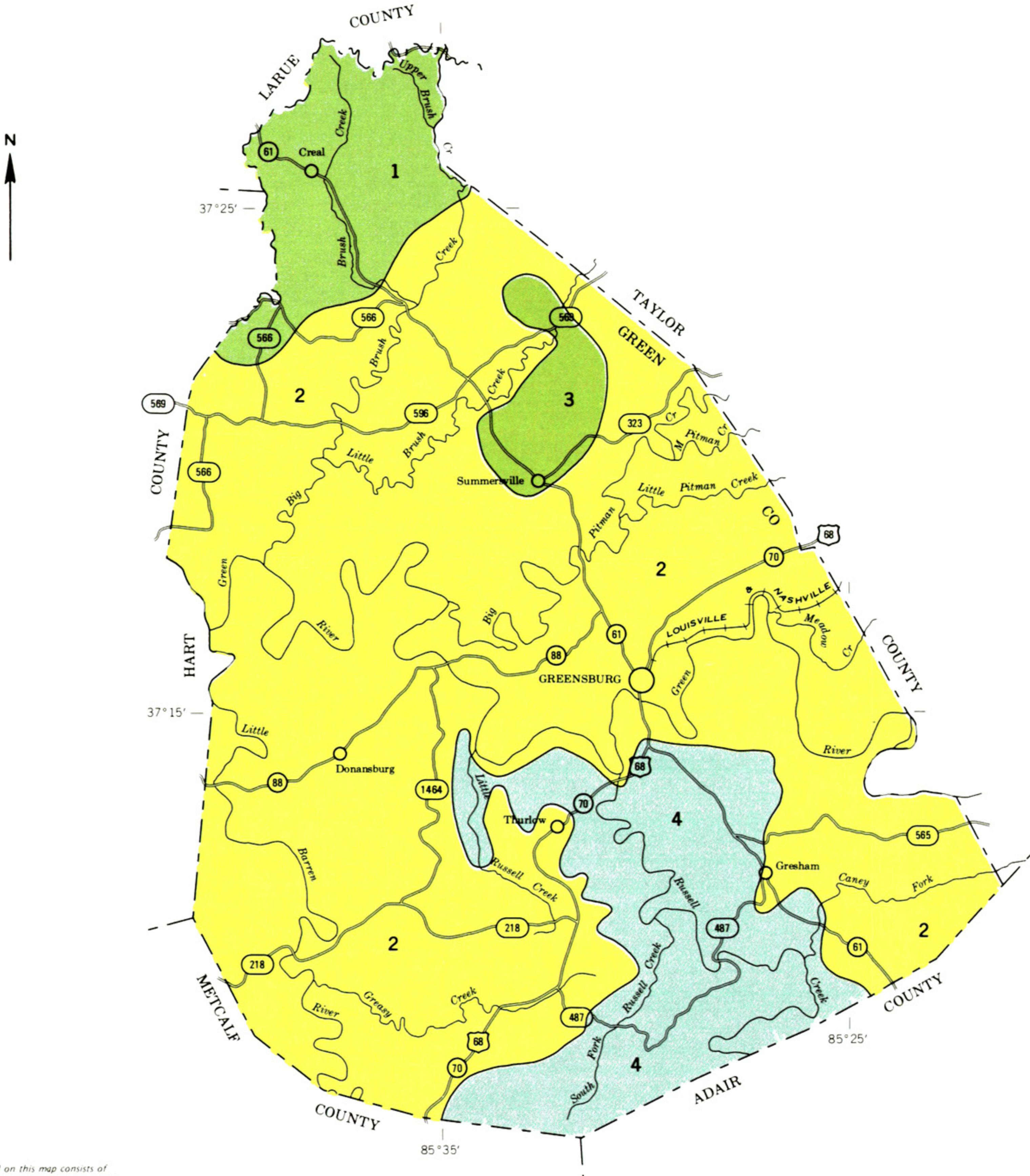

LEGEND

1	FREDERICK-NOLICHUCKY-RINEY: Deep, well drained, sloping to steep loamy soils; on narrow ridgetops and side slopes
2	FREDERICK-MOUNTVIEW: Deep, well drained, gently sloping to moderately steep loamy soils; on side slopes and moderately wide ridgetops
3	FREDERICK-MOUNTVIEW-DICKSON: Deep, well drained and moderately well drained, gently sloping to moderately steep loamy soils; on side slopes and ridgetops
4	FREDERICK-CANEYVILLE: Deep and moderately deep, well drained, sloping to steep loamy soils; on ridgetops and side slopes

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SOIL CONSERVATION SERVICE
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
KENTUCKY AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

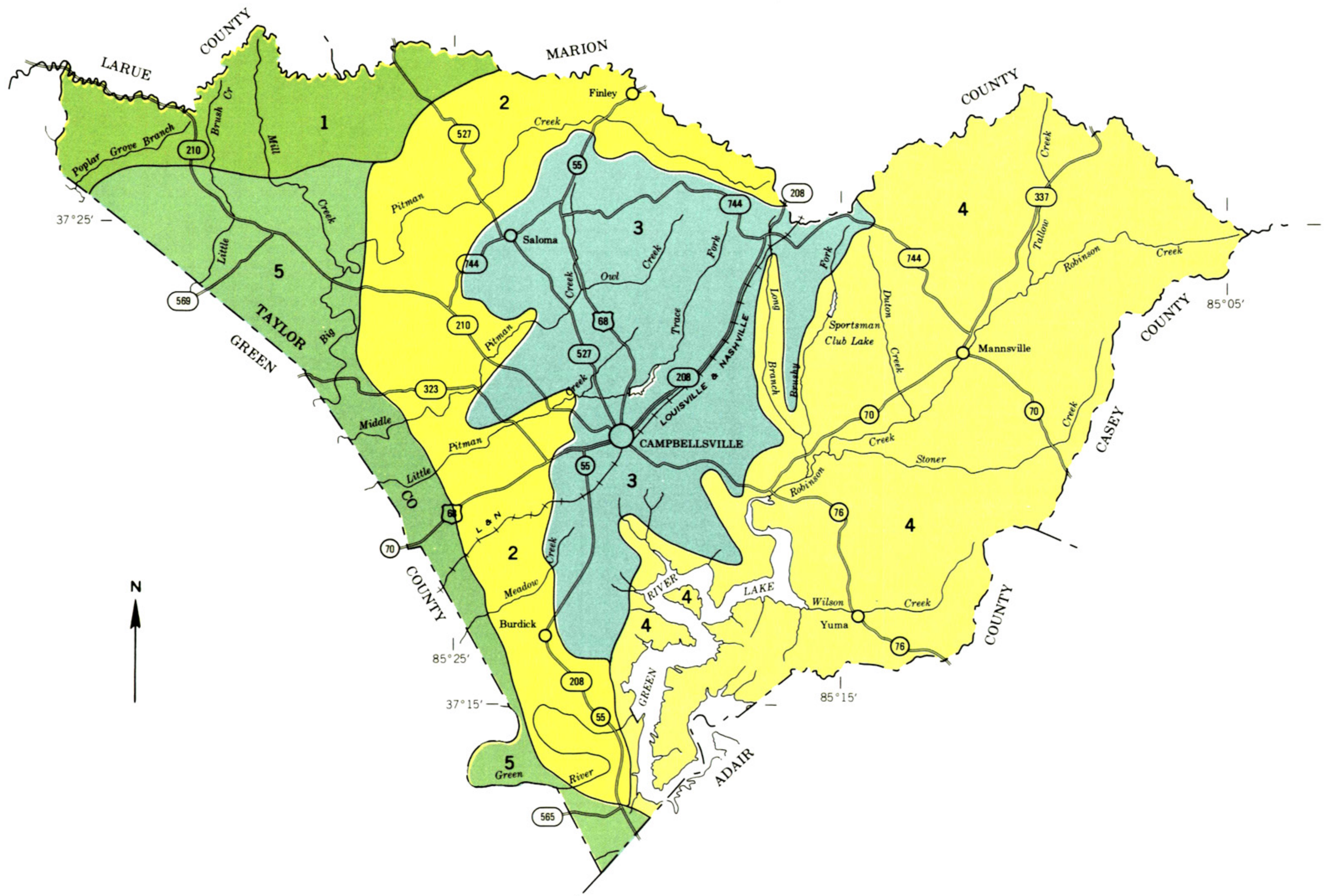
GREEN COUNTY, KENTUCKY

Scale 1:190,080

1 0 1 2 3 Miles

1 0 3 6 Km

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



LEGEND

1 — FREDERICK-NOLICHUCKY-RINEY: Deep, well drained, sloping to steep loamy soils; on narrow ridgetops and side slopes

2 — FREDERICK-FRANKSTOWN-MOUNTVIEW: Deep, well drained, moderately steep to gently sloping loamy soils; on side slopes and moderately wide ridgetops

3 — FREDERICK-MOUNTVIEW-FRANKSTOWN: Deep, well drained, gently sloping loamy soils, on ridgetops; and sloping to moderately steep soils that have a cherty or clayey subsoil, on side slopes

4 — GARMON-SHELOCTA-FRANKSTOWN: Moderately deep and deep, well drained, sloping to very steep loamy soils; on side slopes and narrow ridgetops

5 — FREDERICK-MOUNTVIEW: Deep, well drained, gently sloping to moderately steep loamy soils; on side slopes and moderately wide ridgetops

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KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
KENTUCKY AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

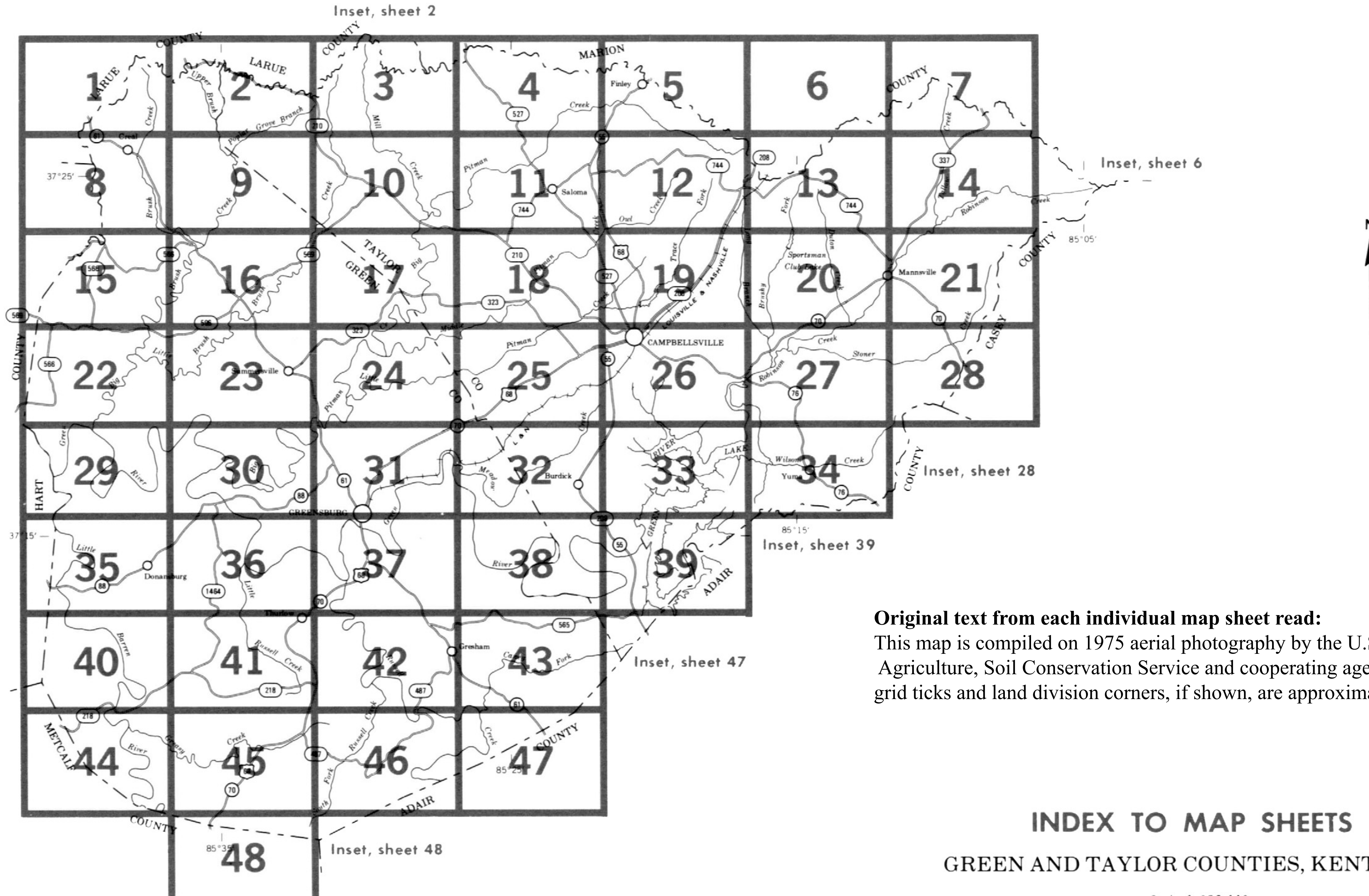
TAYLOR COUNTY, KENTUCKY

Scale 1:190,080

1 0 1 2 3 Miles

1 0 3 6 Km

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



Original text from each individual map sheet read:
This map is compiled on 1975 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

INDEX TO MAP SHEETS

GREEN AND TAYLOR COUNTIES, KENTUCKY

Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 4 8 Km

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
KENTUCKY AGRICULTURAL EXPERIMENT STATION

SOIL LEGEND

The first letter, always a capital, is the initial letter of the soil name. The second letter is used to identify separate mapping units that begin with the same first letter. The third letter, if used, is a capital and connotes slope class. Symbols without a slope letter are for nearly level soils, except for Pits which are miscellaneous areas, and are not soil. A final number, 3, in the symbol shows that the soil is severely eroded.

SYMBOL	NAME
Bo	Bonnie silt loam, terrace
CaC	Caneyville silt loam, very rocky, 6 to 20 percent slopes
CaE	Caneyville-Frederick silt loams, very rocky, 20 to 30 percent slopes
CoD	Colyer Variant silt loam, 12 to 30 percent slopes
DcB	Dickson silt loam, 2 to 6 percent slopes
E1B	Elk silt loam, 2 to 6 percent slopes
E1C	Elk silt loam, 6 to 12 percent slopes
FkB	Frankstown silt loam, 2 to 6 percent slopes
FkC	Frankstown silt loam, 6 to 12 percent slopes
FkD	Frankstown silt loam, 12 to 20 percent slopes
FkE	Frankstown silt loam, 20 to 30 percent slopes
FrB	Frederick silt loam, 2 to 6 percent slopes
FrC	Frederick silt loam, 6 to 12 percent slopes
FrD	Frederick silt loam, 12 to 20 percent slopes
FrE	Frederick silt loam, 20 to 30 percent slopes
FsD3	Frederick silty clay loam, 12 to 20 percent slopes, severely eroded
FvE	Frederick-Nolichucky complex, 20 to 30 percent slopes
GaF	Garmon-Shelocta complex, 25 to 60 percent slopes
LoF	Lowell-Caneyville silt loams, very rocky, 30 to 60 percent slopes
Me	Melvin silt loam
MgB	Monongahela silt loam, 2 to 6 percent slopes
Mh	Morehead silt loam
MoB	Mountview silt loam, 2 to 6 percent slopes
MoC	Mountview silt loam, 6 to 12 percent slopes
NdC	Needmore silty clay, 6 to 12 percent slopes, severely eroded
Ne	Newark silt loam
NhD	Nolichucky loam, 12 to 20 percent slopes
No	Nolin silt loam
OtA	Otwell silt loam, 0 to 2 percent slopes
OtB	Otwell silt loam, 2 to 6 percent slopes
Pt	Pits
ReC	Riney loam, 6 to 12 percent slopes
ReD	Riney loam, 12 to 20 percent slopes
Se	Sensabaugh gravelly silt loam
ShB	Shelocta silt loam, 2 to 6 percent slopes
ShC	Shelocta silt loam, 6 to 12 percent slopes
S1D	Shelocta-Lenberg complex, 12 to 30 percent slopes
Ta	Taft silt loam
Ty	Tyler silt loam

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label) — Hedley Airstrip

- Small airport, airfield, park, oilfield, cemetery, or flood pool — FLOOD POOL LINE

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate — 21
- Federal — 173
- State — 28
- County, farm or ranch — 1283

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small — water, w

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — Gas
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) — CANAL
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial — water, w
- Intermittent — int, i

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — CnB, WaC2

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

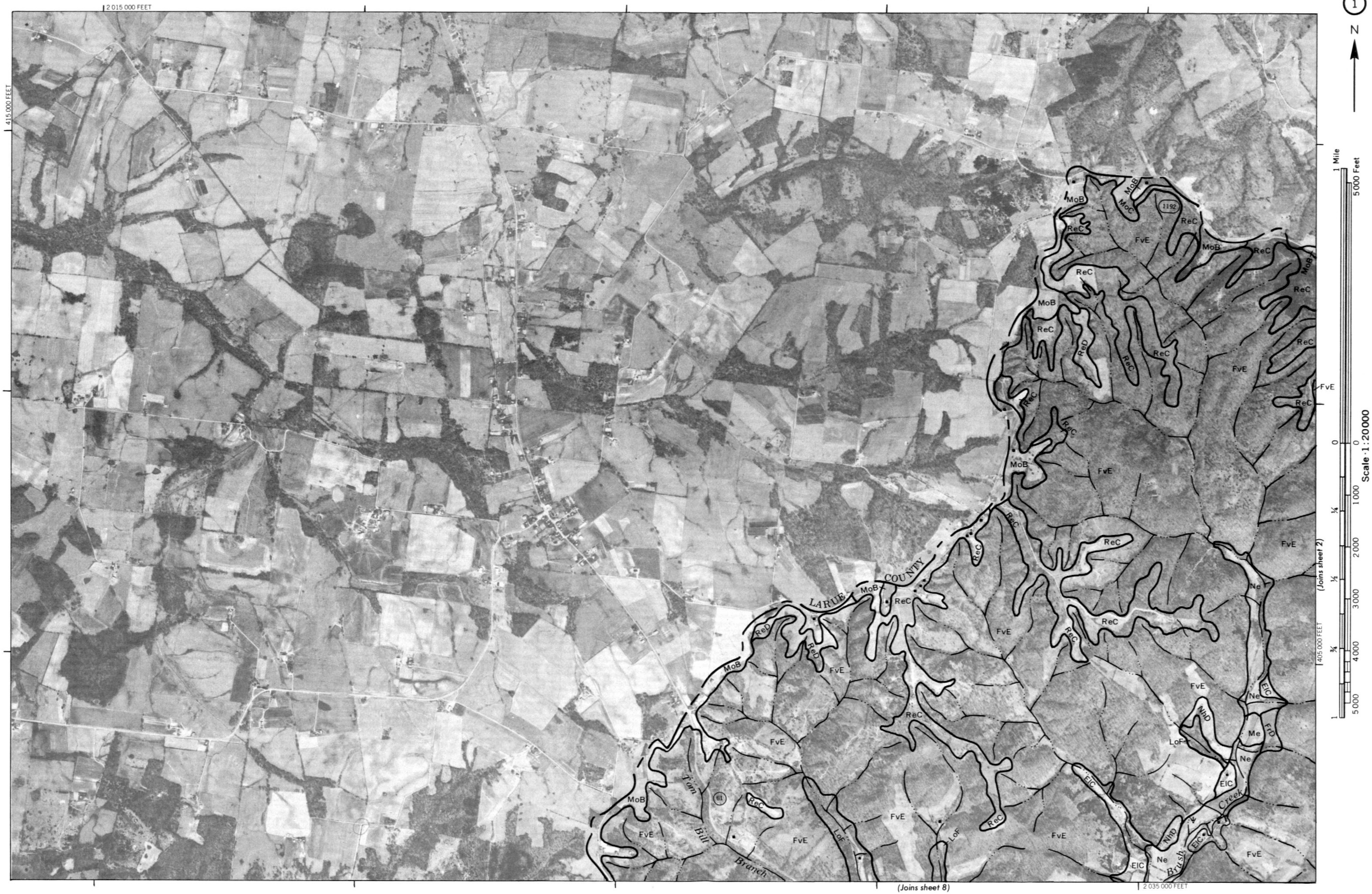
GULLY

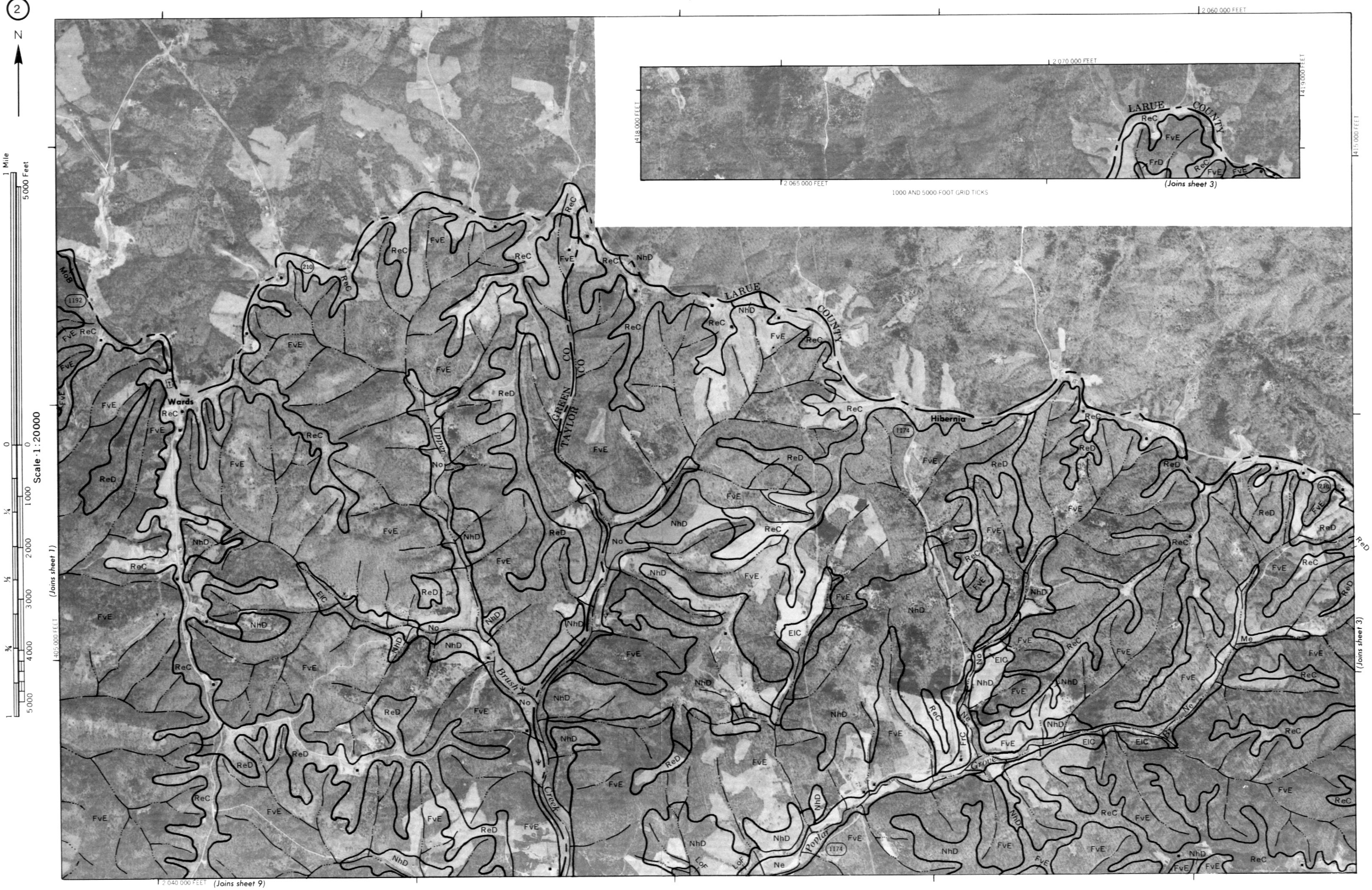
DEPRESSION OR SINK

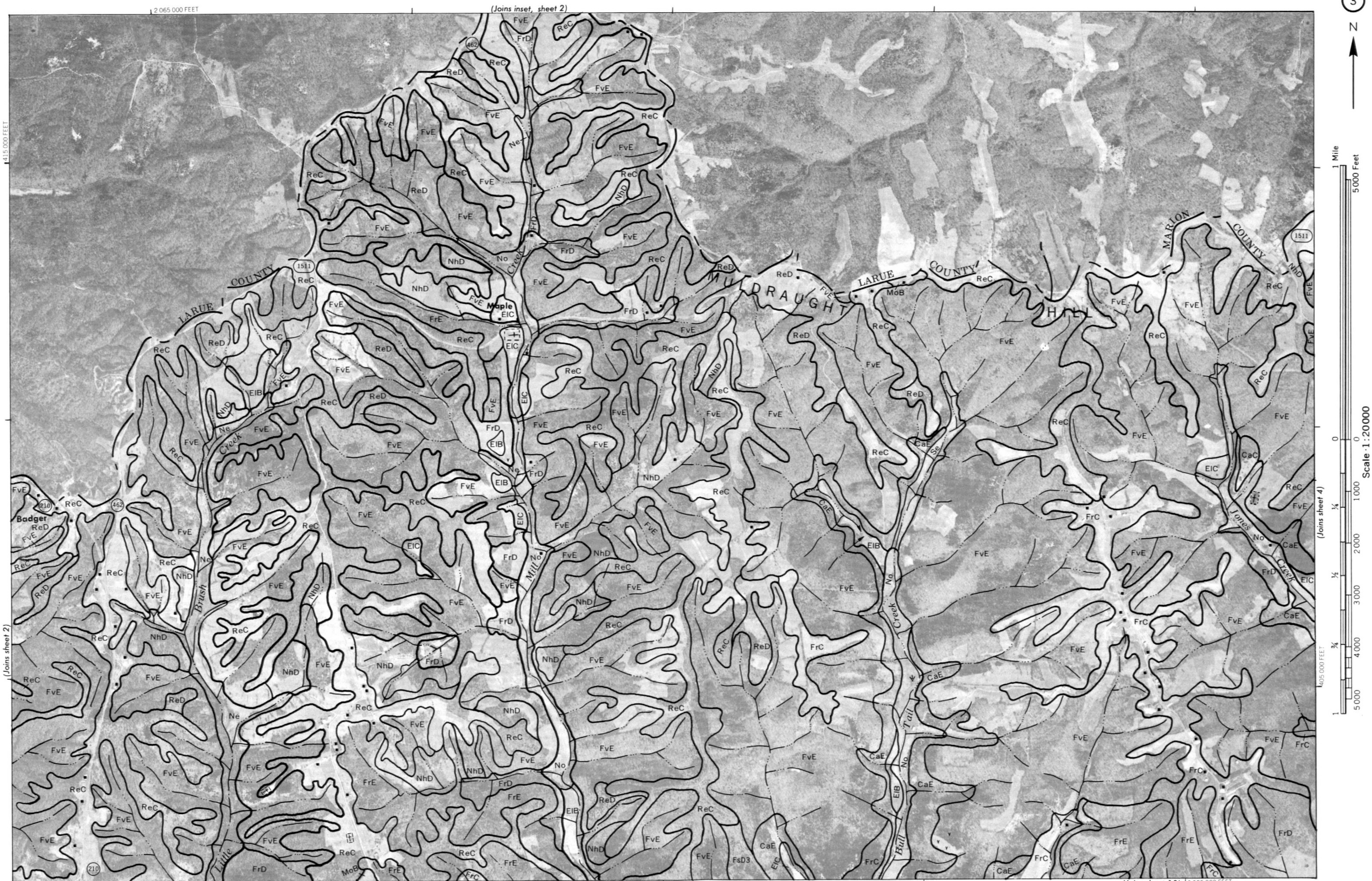
SOIL SAMPLE SITE (normally not shown) — S

MISCELLANEOUS

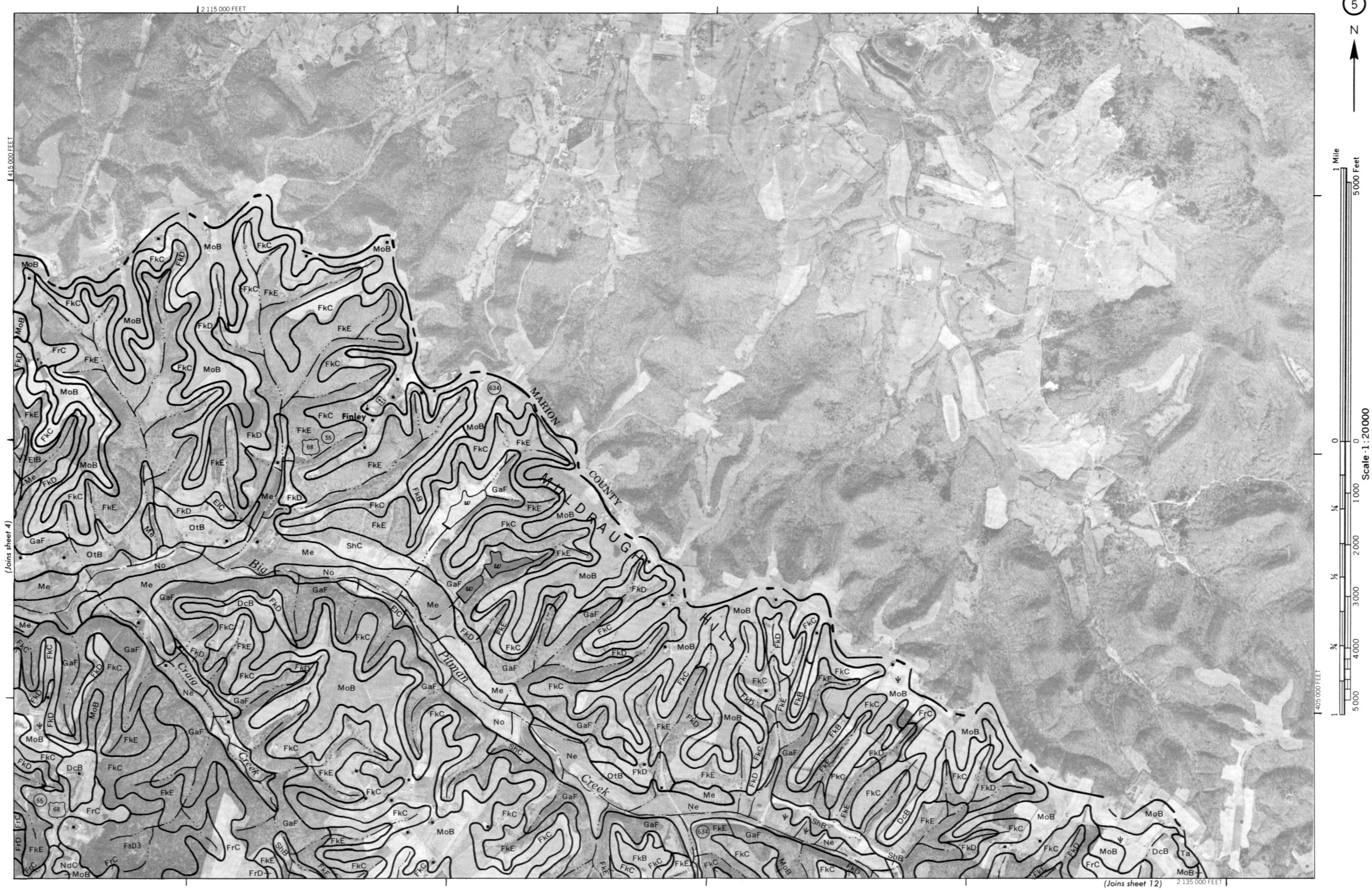
- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

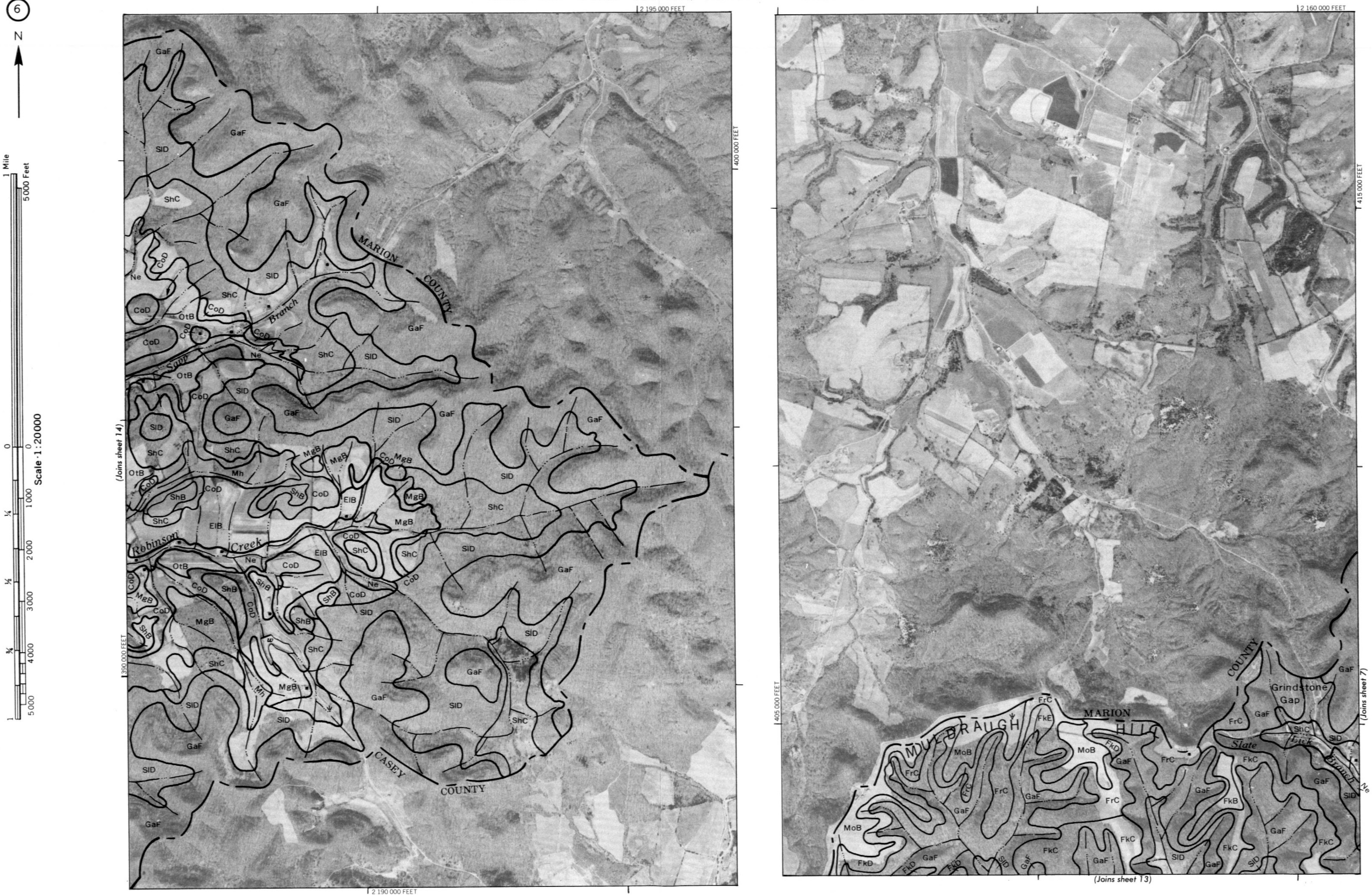

1
N
2 015 000 FEET
415 000 FEET
405 000 FEET
2 035 000 FEET
(Joins sheet 2)
(Joins sheet 8)
LARUE COUNTY
Tom Bill Branch
Brush Creek
1192
61
MoB
MoC
ReC
ReD
FvE
Ne
Me
ElC
NhD
FrD
LoF
1 Mile
5000 Feet
Scale 1:20000

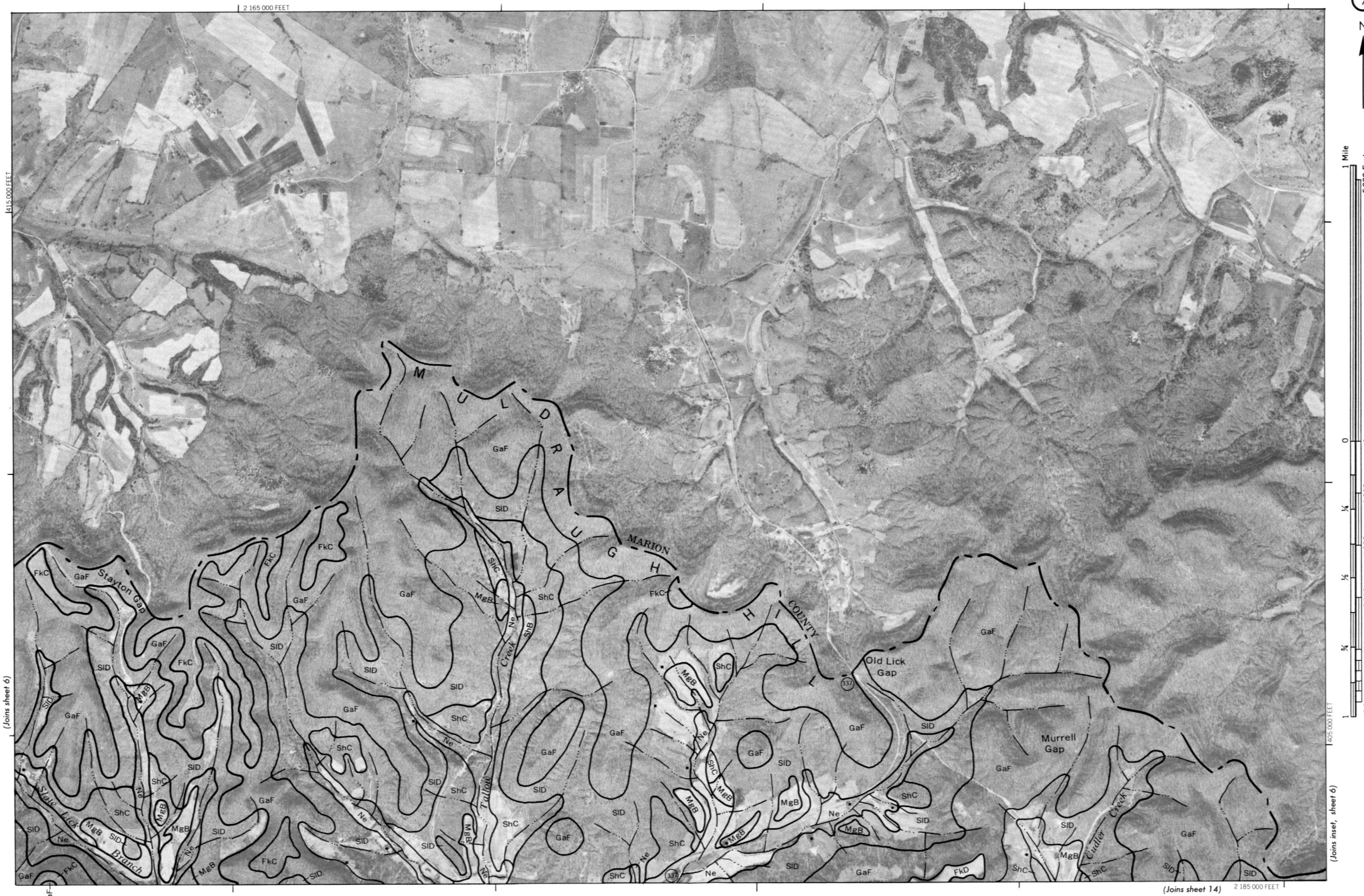

N
Scale 1:20000
1 Mile
5000 Feet
LARUE COUNTY
GREEN CO
TAYLOR CO
Wards
Hibernia
Upper
Brush
Creek
Poplar
Grove
ReC
ReD
FvE
FrD
FrC
NhD
No
Ne
Me
ElC
LoF
MoB
1192
210
1174
2 040 000 FEET
2 060 000 FEET
2 065 000 FEET
2 070 000 FEET
405 000 FEET
415 000 FEET
418 000 FEET
419 000 FEET
1000 AND 5000 FOOT GRID TICKS
(Joins sheet 1)
(Joins sheet 3)
(Joins sheet 9)


3
N
(Joins inset, sheet 2)
2 065 000 FEET
415 000 FEET
LARUE COUNTY
MULDRAUGHT
LARUE COUNTY
HILL
MARION COUNTY
Maple
Badger
Brush Creek
Little
Mill Creek
Creek
Bull Tail Creek
No Creek
Jones Creek
462
1511
210
(Joins sheet 2)
(Joins sheet 4)
(Joins sheet 10)
2 085 000 FEET
405 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
1000
2000
3000
4000
5000


4
N
1 Mile
5000 Feet
Scale 1:20 000
0
1000
2000
3000
4000
5000
0
¼
½
¾
1
2 010 000 FEET
415 000 FEET
405 000 FEET
2 090 000 FEET
(Joins sheet 3)
(Joins sheet 5)
(Joins sheet 11)
MARION COUNTY
MULDRAUGH HILL
Willowtown
Willowtown Creek
Youngs Branch
Jones Creek
Big Pitman Creek
527
1511
1252


5
N
2 115 000 FEET
415 000 FEET
405 000 FEET
2 135 000 FEET
(Joins sheet 4)
(Joins sheet 12)
MARION COUNTY
MULDRAUGH HILL
Finley
Big Pitman Creek
Craig Creek
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
0
1000
2000
3000
4000
5000


6
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
2 195 000 FEET
400 000 FEET
390 000 FEET
2 190 000 FEET
(Joins sheet 14)
MARION COUNTY
CASEY COUNTY
Soap
Branch
Robinson
Creek
2 160 000 FEET
415 000 FEET
405 000 FEET
(Joins sheet 7)
(Joins sheet 13)
MULDRAUGH HILL
MARION
COUNTY
Grindstone Gap
Slate Lick Branch
GaF
SlD
ShC
CoD
Ne
OtB
MgB
Mh
ShB
ElB
FrC
FkE
FkD
FkC
FkB
MoB


7
N
2 165 000 FEET
415 000 FEET
2 185 000 FEET
405 000 FEET
(Joins sheet 6)
(Joins inset, sheet 6)
(Joins sheet 14)
MULDRAUGH HILL
MARION COUNTY
Stayton Gap
Old Lick Gap
Murrell Gap
Tallow Creek
Slate Lick Branch
Cudler Creek
337
GaF
FkC
SlD
ShC
ShB
MgB
Ne
FkD
1 Mile
5000 Feet
Scale 1:20000

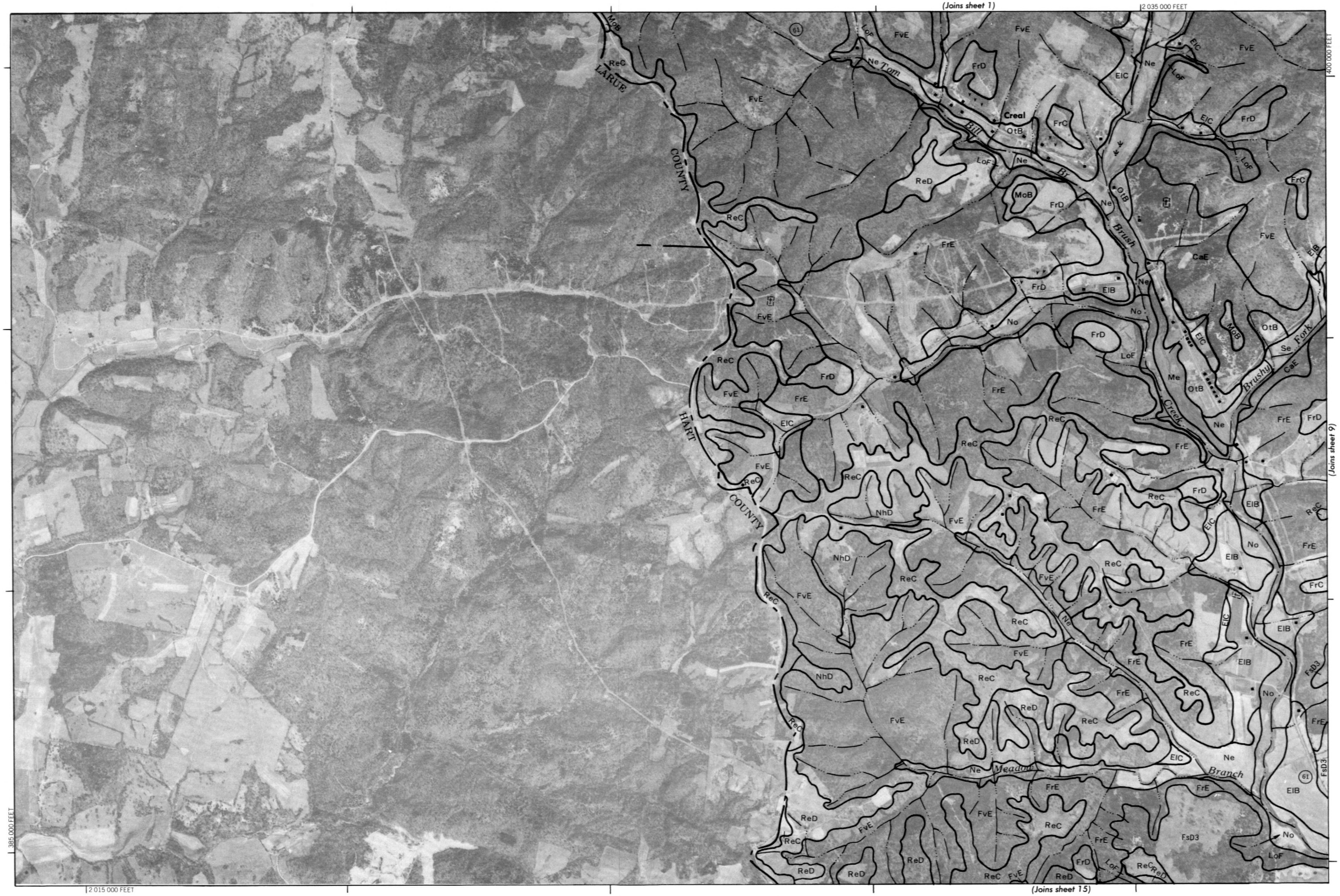
8

N

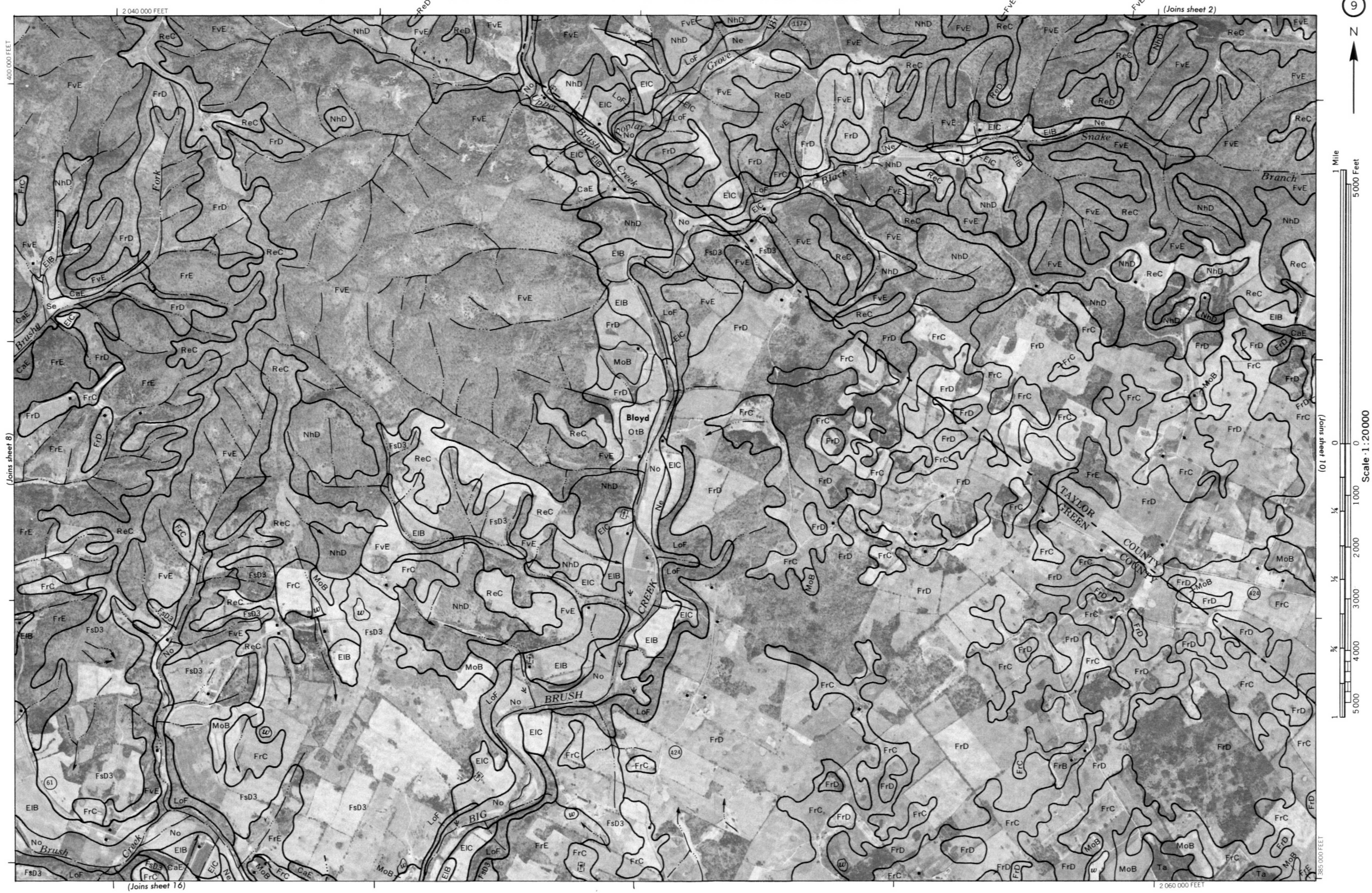
Scale 1:20000

1 Mile | ¾ | ½ | ¼ | 0

5000 Feet | 4000 | 3000 | 2000 | 1000 | 0



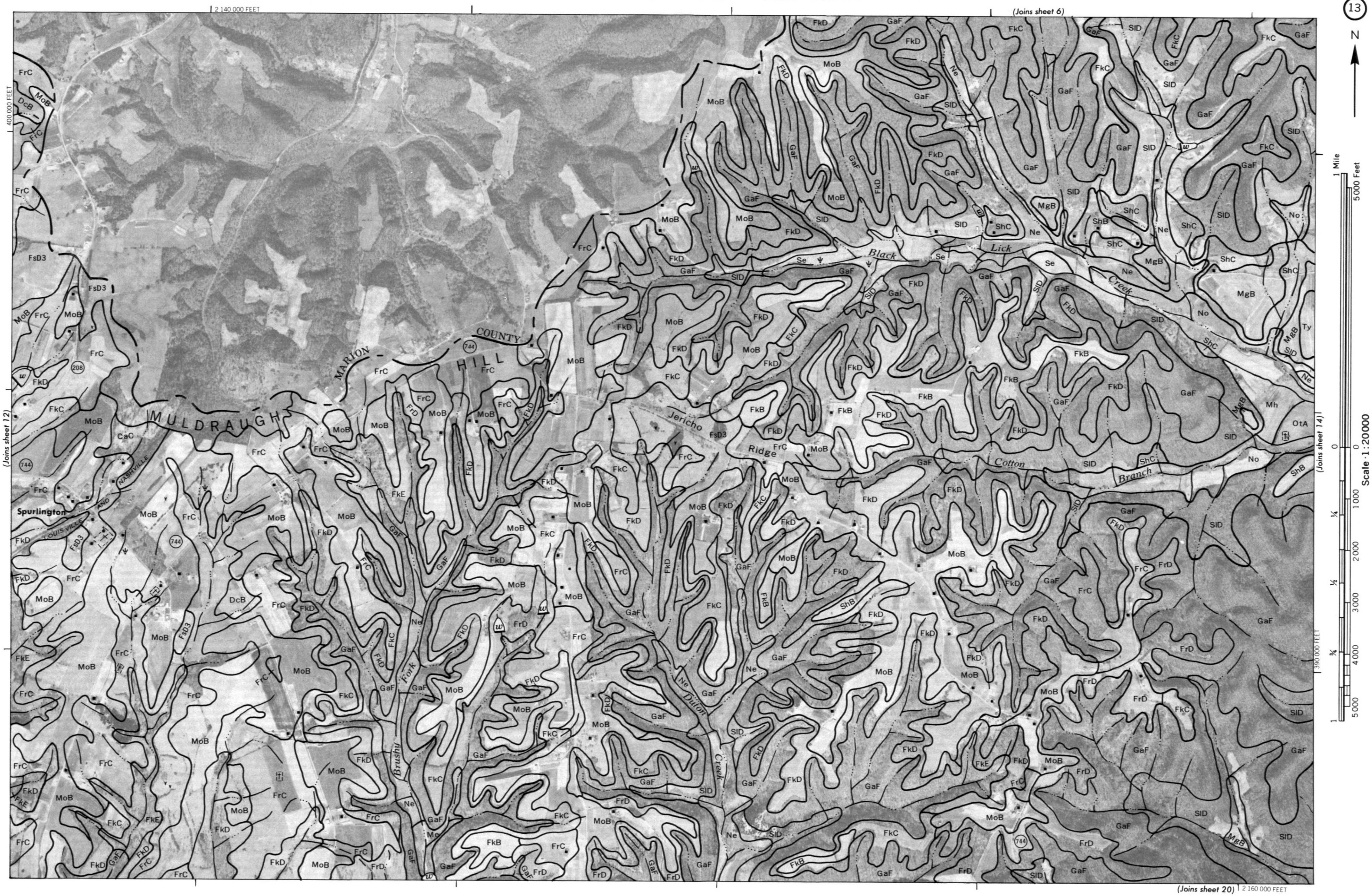
GREEN AND TAYLOR COUNTIES, KENTUCKY — SHEET NUMBER 9




10
N
(Joins sheet 3)
(Joins sheet 9)
(Joins sheet 11)
(Joins sheet 17)
2 085 000 FEET
400 000 FEET
385 000 FEET
2 065 000 FEET
1 Mile
5000 Feet
Scale 1:20000
Little Brush Creek
Bull Tail Creek
Mill Creek
Splatter Branch
Big Pitman Creek
White Rose
Mac
TAYLOR
GREEN
COUNTY
210
424
560
569
2220
Pt

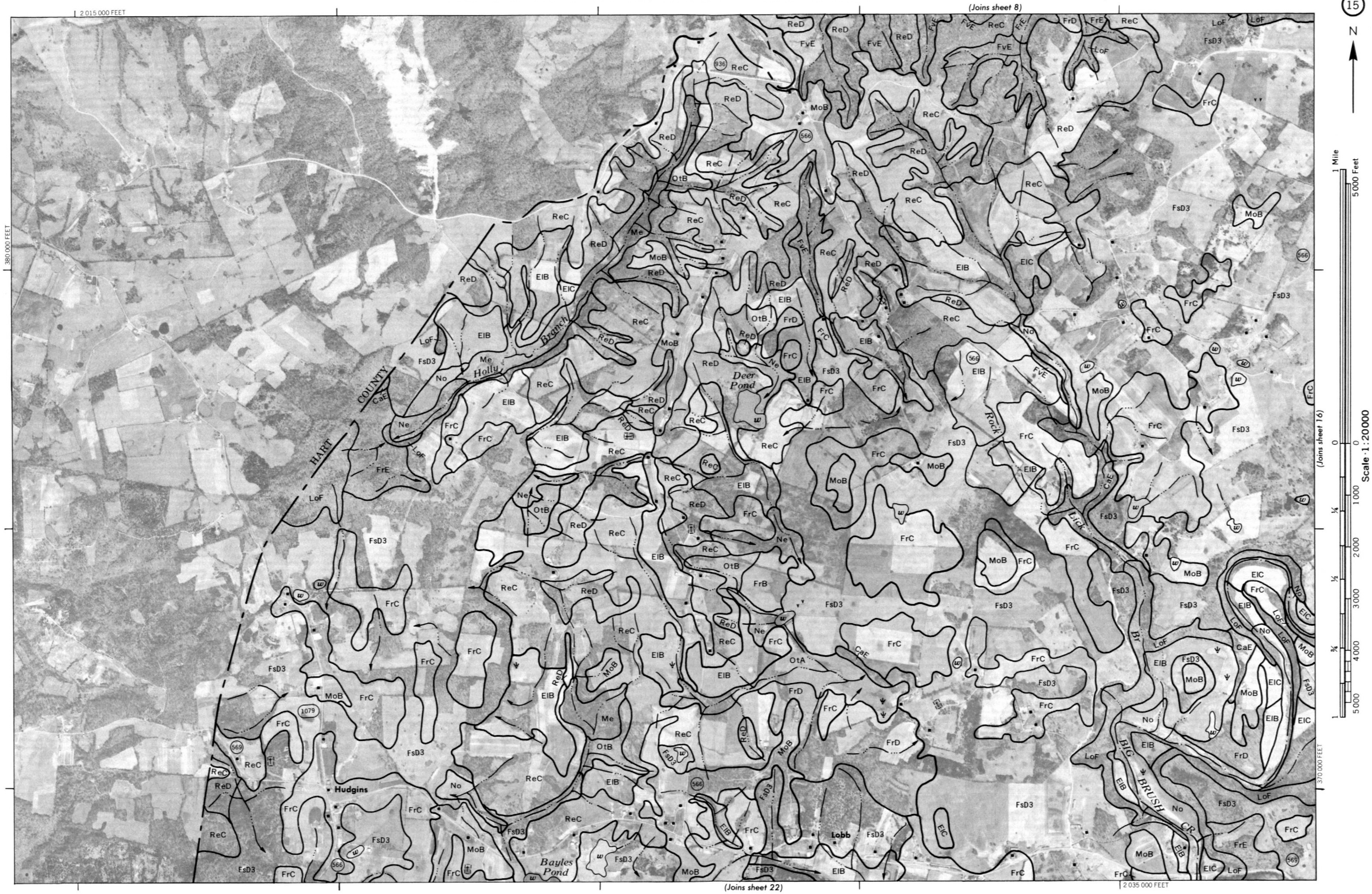

11
N
(Joins sheet 4)
(Joins sheet 10)
(Joins sheet 12)
(Joins sheet 18)
2 090 000 FEET
2 110 000 FEET
400 000 FEET
390 000 FEET
Jones Creek
Willowtown Creek
Pitman Creek
Ferrill Reservoir
Middle Creek
Run
Big
Falling Timber
Flat
Hobson
Saloma
Durhamtown
527
55
68
744
210
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1
MoB
FrC
FrD
FkE
FkD
FkC
DcB
CaE
Ne
No
Mh
ElB
ElC
FsD3
OtB
ShC
MoC
GaF
Ta
CaC
FrE
FkB
LoF

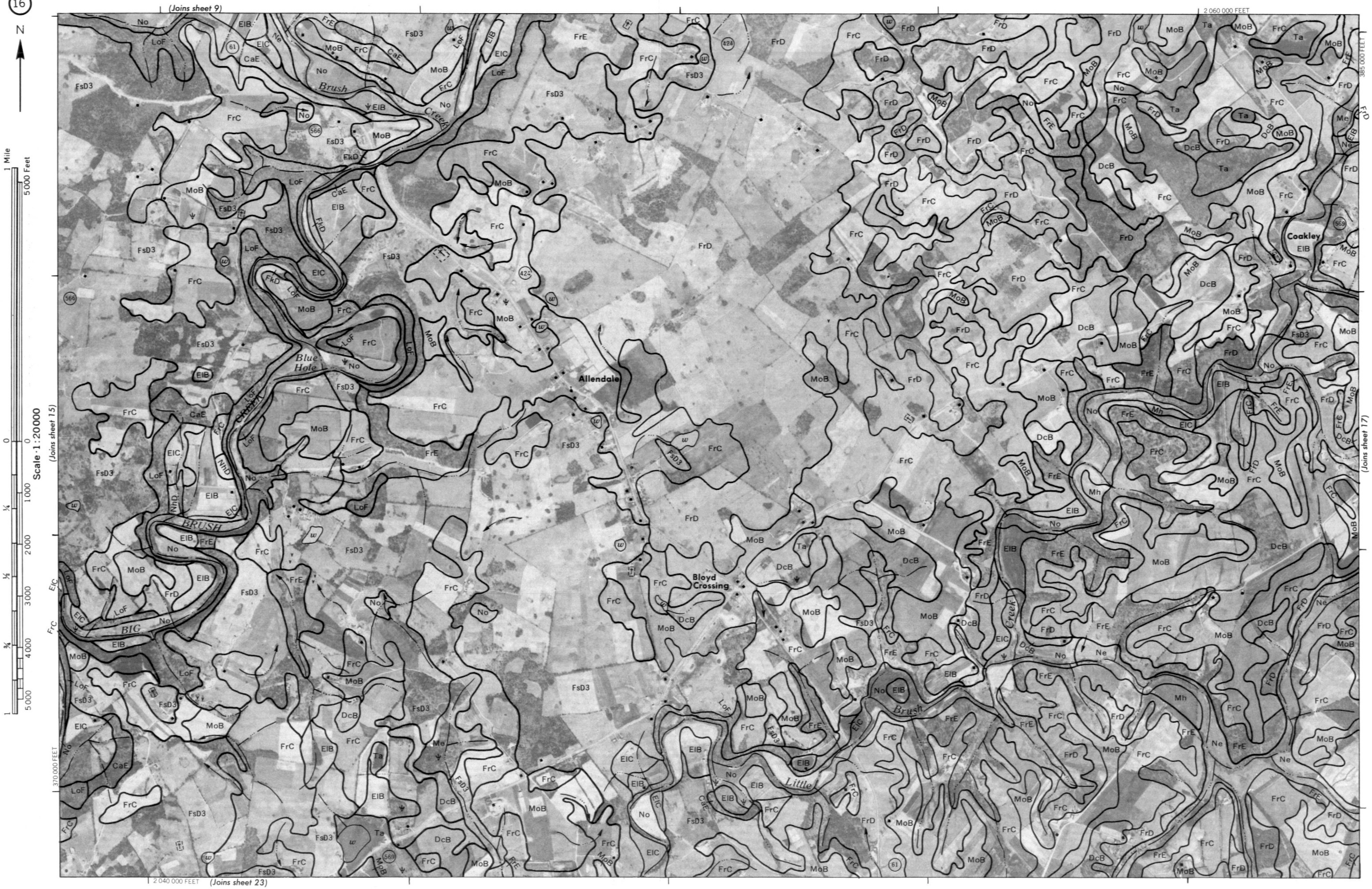

N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 5)
(Joins sheet 11)
(Joins sheet 13)
(Joins sheet 19)
2 135 000 FEET
400 000 FEET
390 000 FEET
2 115 000 FEET
MARION COUNTY
Owl Creek
Trace Fork
LOUISVILLE AND NASHVILLE

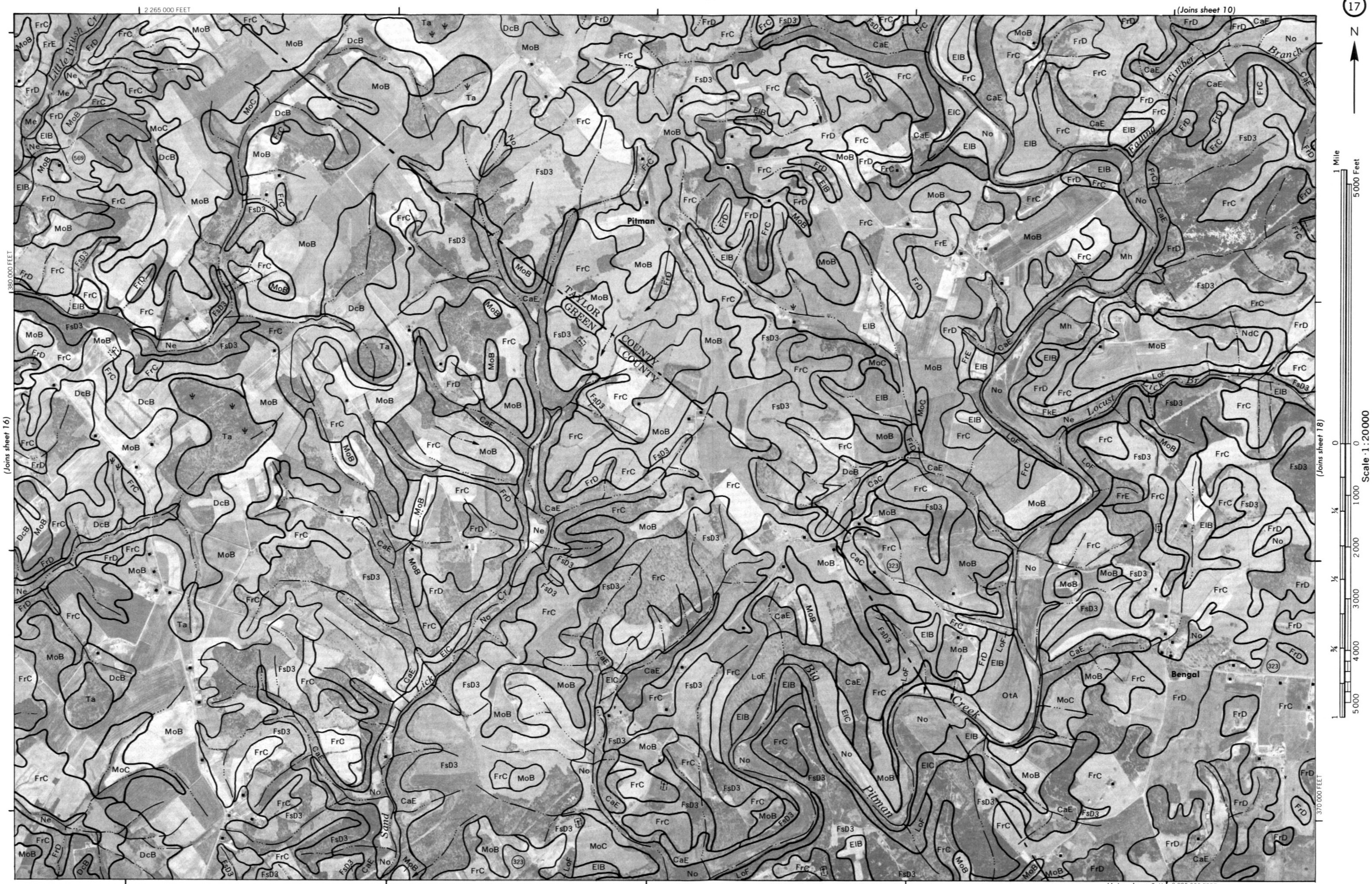

13
N
2 140 000 FEET
(Joins sheet 6)
400 000 FEET
(Joins sheet 12)
(Joins sheet 14)
390 000 FEET
(Joins sheet 20)
2 160 000 FEET
MULDRAUGH HILL
MARION COUNTY
Black Lick Creek
Jericho Ridge
Cotton Branch
Brushy Fork
Dutton Creek
Spurlington
LOUISVILLE AND NASHVILLE
1 Mile
5000 Feet
Scale 1:20000


14
N
(Joins sheet 7)
(Joins sheet 13)
(Joins inset, sheet 6)
(Joins sheet 21)
MARION CO
CASEY CO
2 185 000 FEET
2 165 000 FEET
400 000 FEET
390 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
Merrimac
Oakland Lake
Robinson Creek
Tallow Creek
Cutler Creek
Murrell Branch
Sapp Br
State Lick Branch
Lick Creek
Black Cotton Branch
377
GaF
SlD
ShC
ShB
MgB
Ne
No
Mh
Ty
CoD
OtB
OtA
ElB
FkC
FkD
Me

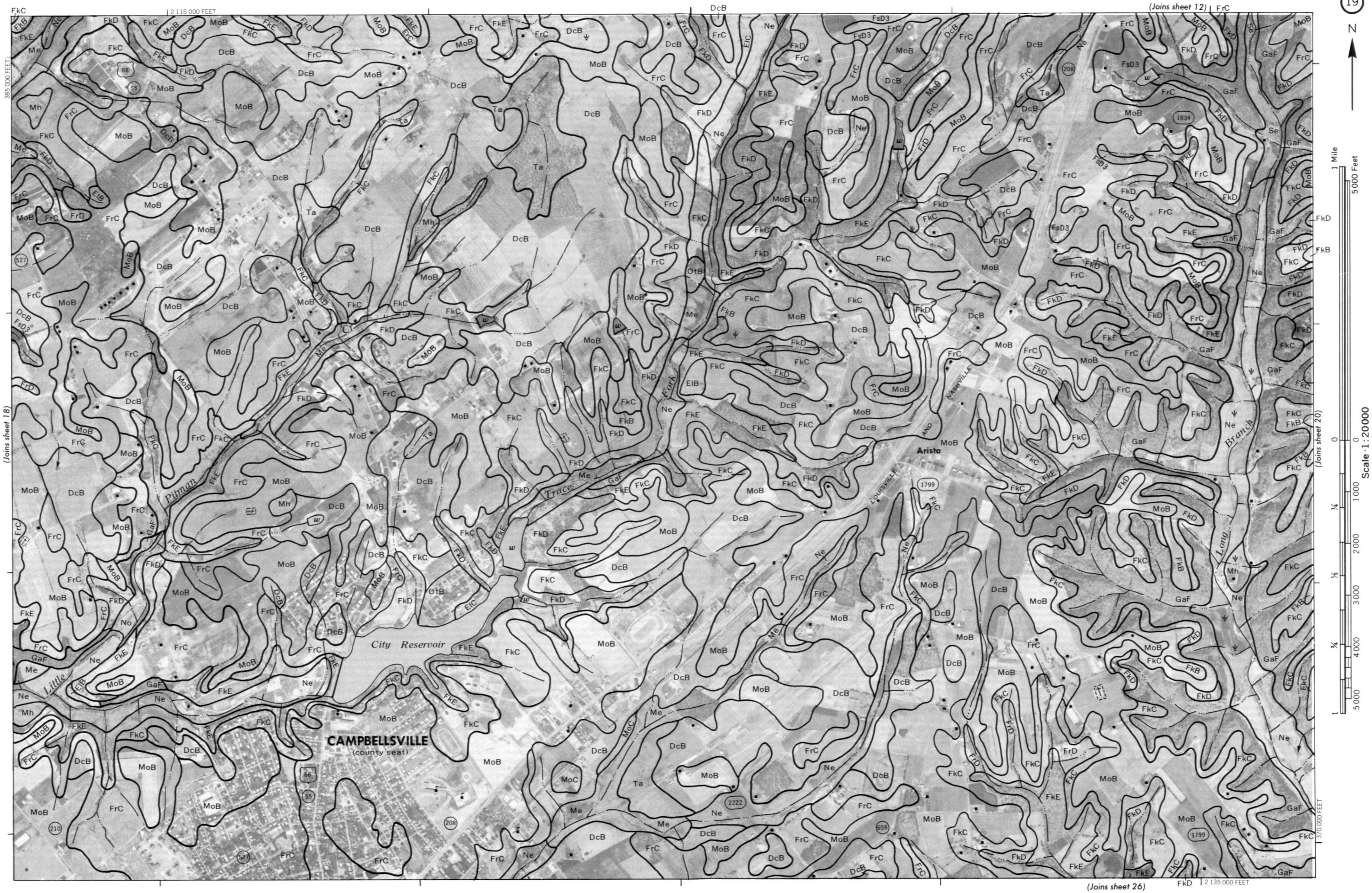
15


(Joins sheet 8)
(Joins sheet 16)
(Joins sheet 22)
2 015 000 FEET
380 000 FEET
370 000 FEET
2 035 000 FEET
HART COUNTY
Holly Branch
Deer Pond
Rock Lick Br
BIG BRUSH CR
Hudgins
Lobb
Bayles Pond
N
1 Mile
5000 Feet
Scale 1:20000


N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
1/4
1/2
3/4
1
(Joins sheet 9)
(Joins sheet 15)
(Joins sheet 17)
(Joins sheet 23)
2 060 000 FEET
385 000 FEET
370 000 FEET
2 040 000 FEET
Allendale
Bloyd Crossing
Coakley
Blue Hole
Brush Creek
BIG BRUSH CREEK
Little Brush Creek


17
N
(Joins sheet 10)
(Joins sheet 16)
(Joins sheet 18)
(Joins sheet 24)
2 265 000 FEET
2 285 000 FEET
380 000 FEET
370 000 FEET
Pitman
Bengal
TAYLOR
GREEN
COUNTY
COUNTY
Little Brush Cr
Timber
Branch
Falling
Locust
Lick
Br
Big
Pitman
Creek
Sand
Lick
Cr
569
323
1 Mile
5000 Feet
Scale 1:20000


18
N
(Joins sheet 11)
(Joins sheet 17)
(Joins sheet 19)
(Joins sheet 25)
2 110 000 FEET
385 000 FEET
370 000 FEET
2 090 000 FEET
1 Mile
5000 Feet
Scale 1:20000
Falling Timber Branch
Lick Branch
Locust Lick
Flat Run
Porter Reservoir
Middle Pitman Creek
Pitman Creek
Little Pitman Creek
Sweeneyville
744
210
527
323
883


19
N
(Joins sheet 12)
(Joins sheet 18)
(Joins sheet 20)
(Joins sheet 26)
2 115 000 FEET
2 135 000 FEET
385 000 FEET
370 000 FEET
CAMPBELLSVILLE
(county seat)
City Reservoir
Arista
Pitman
Trace
Fork
Little
Long
Branch
LOUISVILLE
AND
NASHVILLE
1 Mile
5000 Feet
Scale 1:20000


20
N
(Joins sheet 13)
(Joins sheet 19)
(Joins sheet 21)
(Joins sheet 27)
2 160 000 FEET
385 000 FEET
370 000 FEET
2 140 000 FEET
Scale 1:20000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
Wooleyville
Mannsville
Acton
Sportsman Club Lake
Brushy Fork
Duton Creek
Possum Branch
Robinson Creek
Long Br
1834
744
70

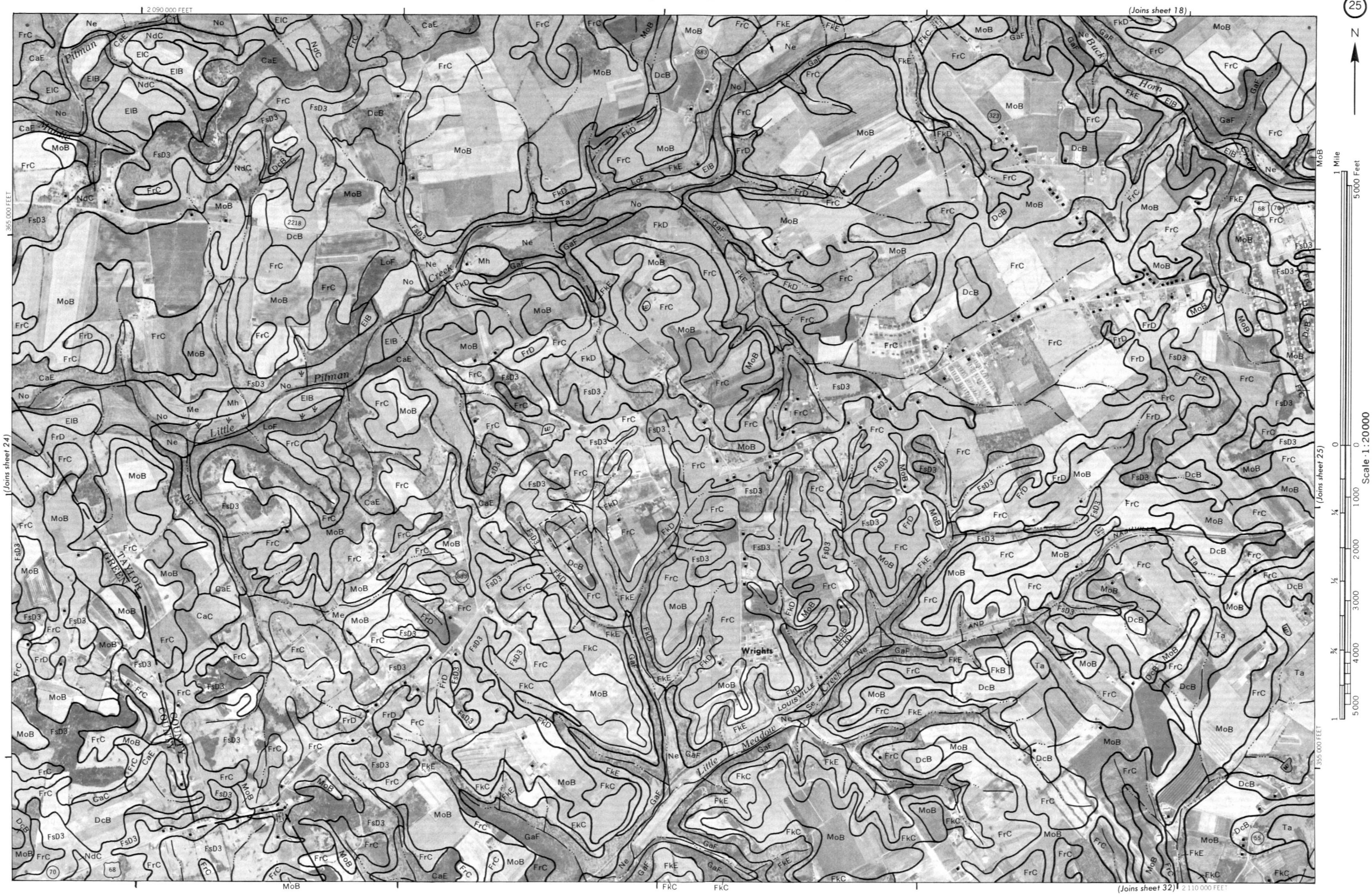

21
N
(Joins sheet 14)
(Joins sheet 20)
(Joins sheet 28)
2 165 000 FEET
2 185 000 FEET
385 000 FEET
375 000 FEET
Robinson
Creek
Long
Ridge
Stoner
Creek
Bals
Ridge
CASEY
COUNTY
1 Mile
5000 Feet
Scale 1:20000

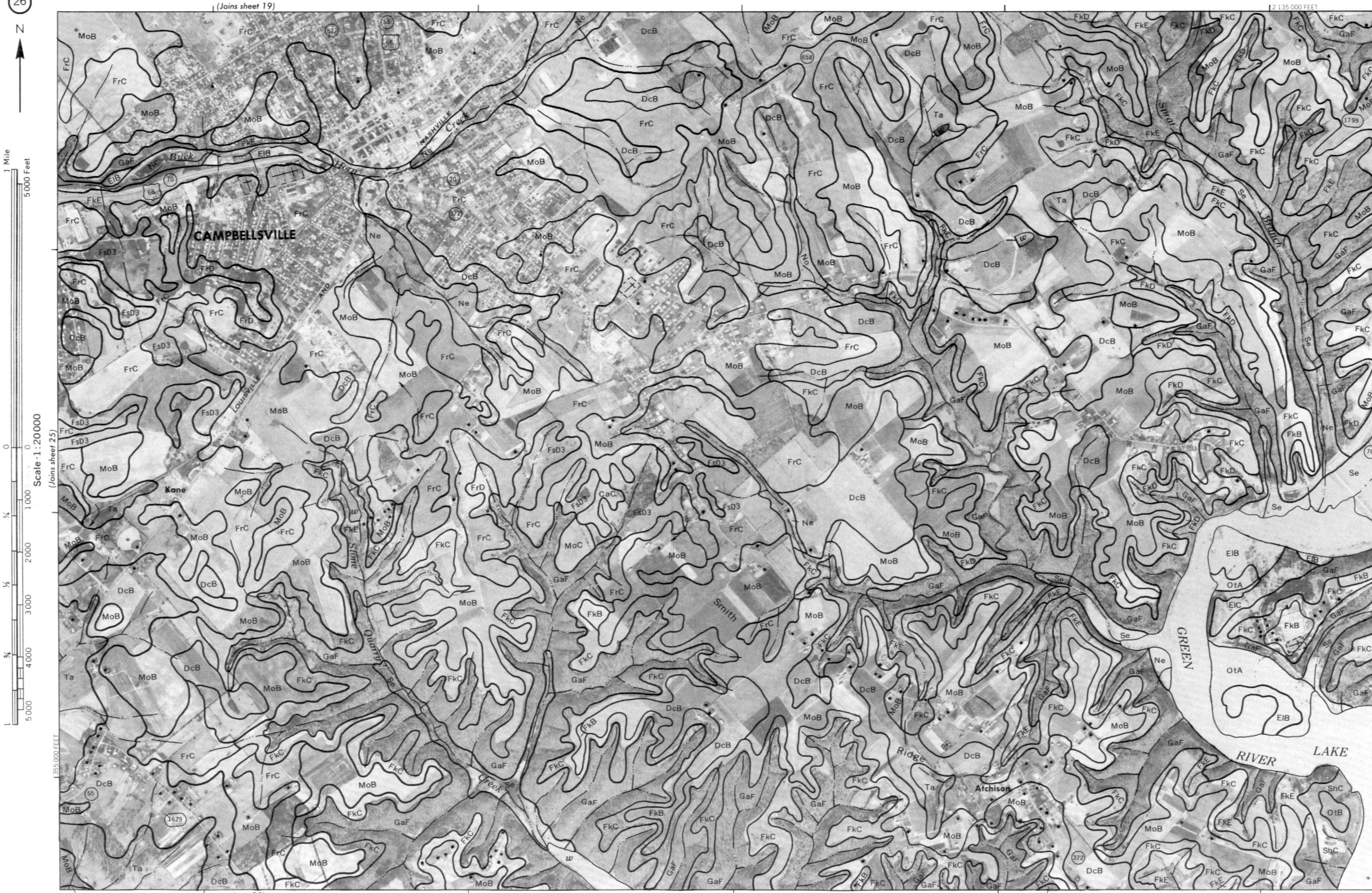

(Joins sheet 15)
(Joins sheet 23)
(Joins sheet 29)
N
1 Mile
5000 Feet
Scale 1:20000
2 035 000 FEET
2 015 000 FEET
365 000 FEET
355 000 FEET
Bayles Pond
Dobson Pond
HART COUNTY
Eve
GREEN RIVER
Green River
BIG BRUSH CREEK
Little Brush Cr
BIG BRUSH CREEK


23
N
(Joins sheet 16)
(Joins sheet 22)
(Joins sheet 24)
(Joins sheet 30)
2 040 000 FEET
2 060 000 FEET
365 000 FEET
355 000 FEET
Summersville
Gabe
The Sinks of Little Brush
Little Brush Creek
Dixie Creek
GREEN RIVER
Paddy Hole
Scale 1:20000
1 Mile
5000 Feet

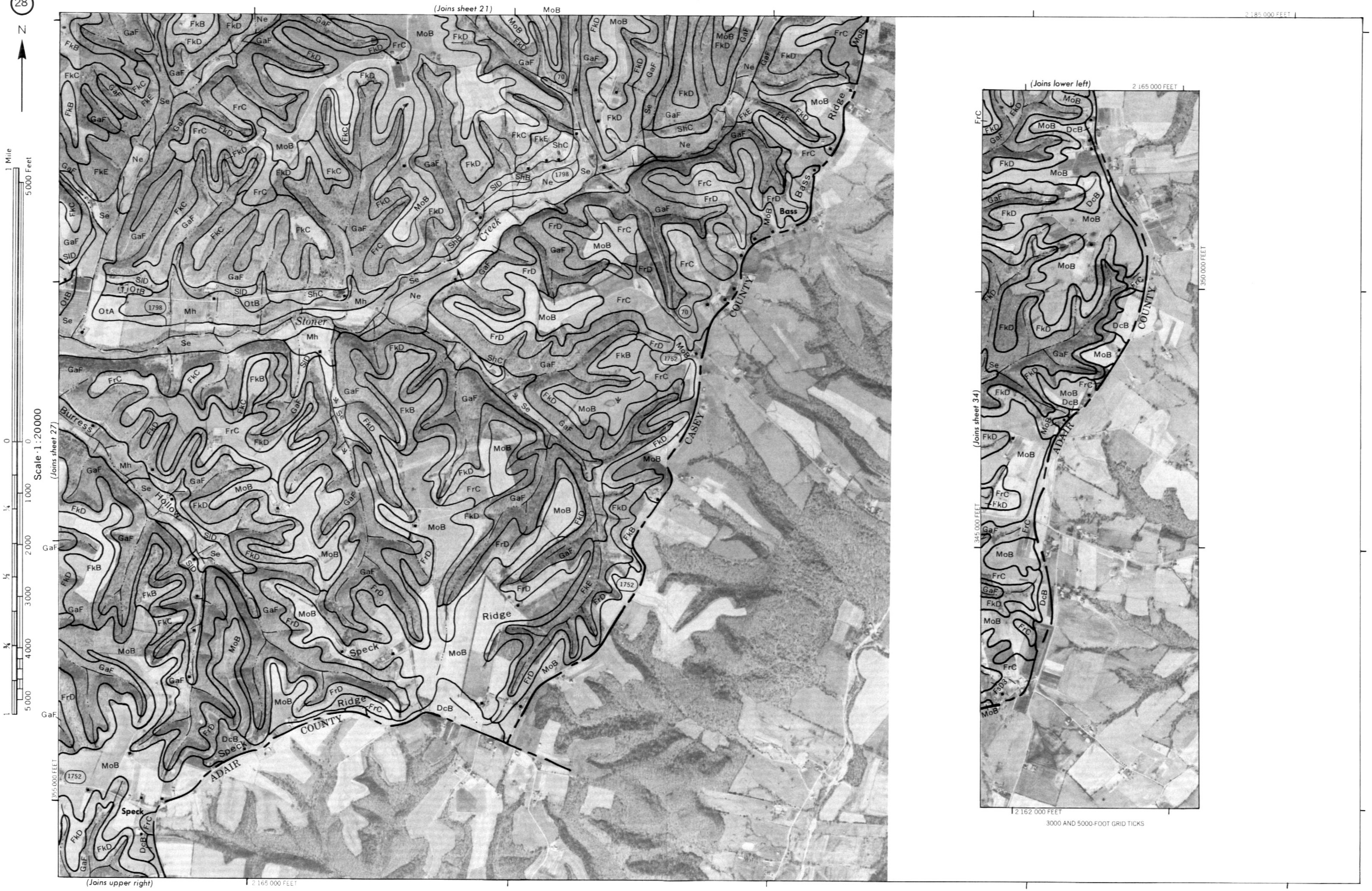

24
N
(Joins sheet 17)
(Joins sheet 23)
(Joins sheet 25)
(Joins sheet 31)
2 085 000 FEET
2 065 000 FEET
365 000 FEET
355 000 FEET
Scale 1:20000
1 Mile
5000 Feet
Big Pitman Creek
Little Pitman Creek
Middle Pitman Creek
Sand Lick Cr
Marshall Ridge
GREEN COUNTY
TAYLOR COUNTY
323
793
61
2218

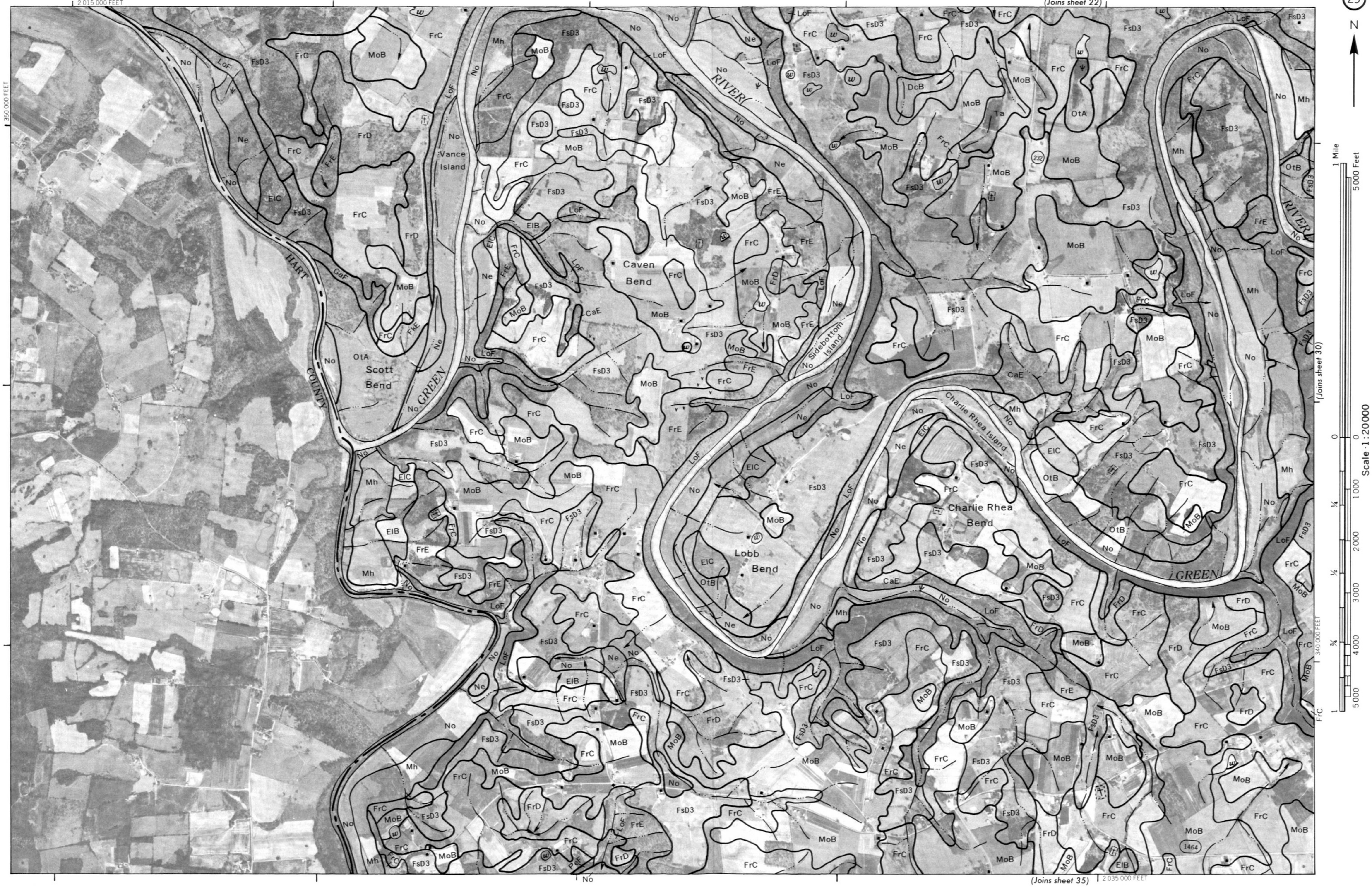
GREEN AND TAYLOR COUNTIES, KENTUCKY — SHEET NUMBER 25



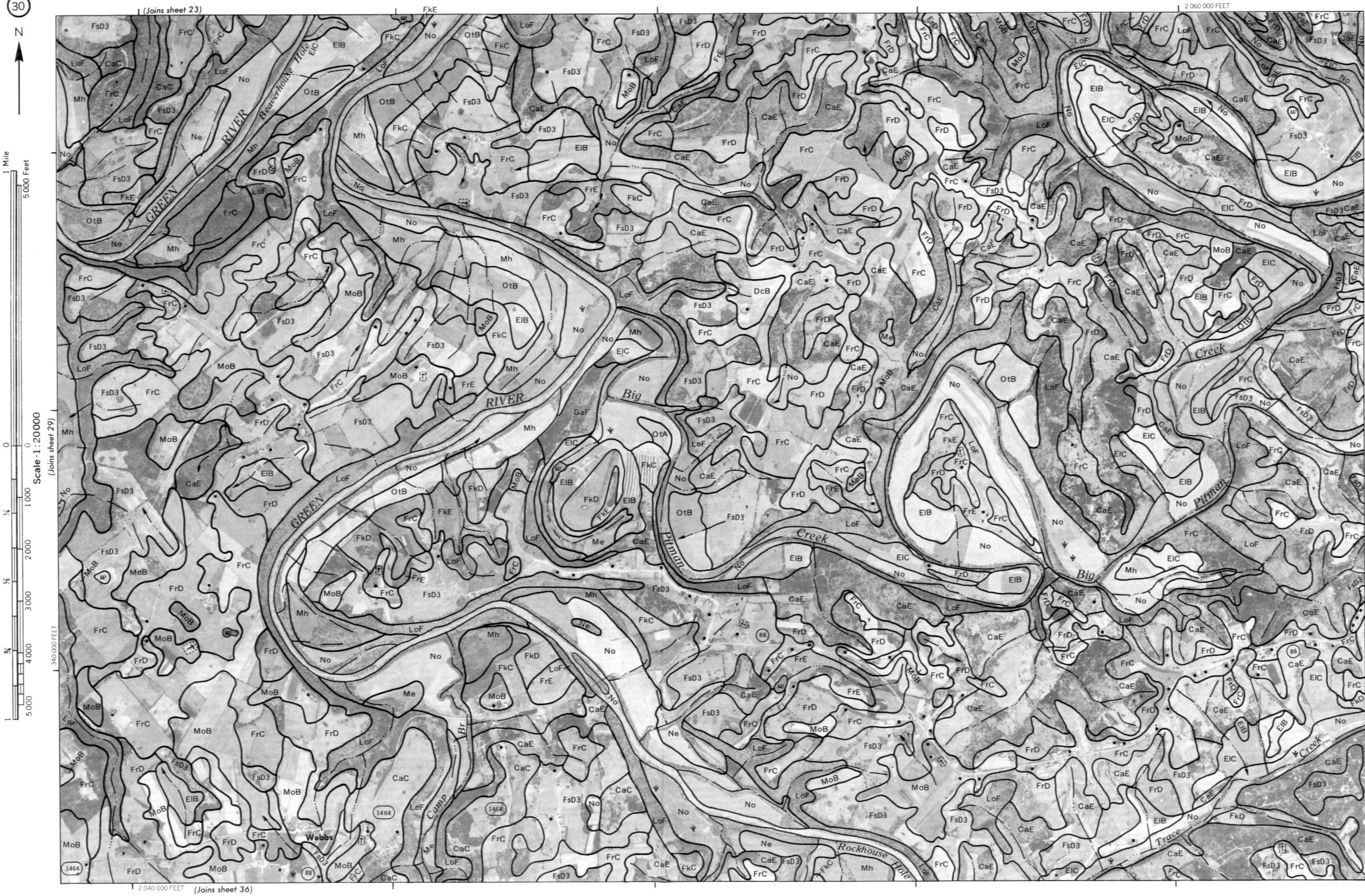

26
N
(Joins sheet 19)
(Joins sheet 25)
(Joins sheet 27)
(Joins sheet 33)
2 135 000 FEET
2 115 000 FEET
365 000 FEET
355 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1
CAMPBELLSVILLE
Kane
Atchison
NASHVILLE
LOUISVILLE
AND
Buck
Horn
Creek
Stone
Quarry
Creek
Smith
Ridge
Sprout
Branch
GREEN
RIVER
LAKE


(Joins sheet 20)
(Joins sheet 26)
(Joins sheet 28)
(Joins sheet 34)
2 140 000 FEET
2 160 000 FEET
365 000 FEET
355 000 FEET
N
1 Mile
5000 Feet
0
¼
½
¾
1
1000
2000
3000
4000
5000
Scale 1:20000
Acton
Elk Horn
Gaddis
Ridge
White
Ridge
White
Ridge
Robinson
Creek
Robinson
Creek
Stoner
Creek
Long
Branch
Brushy
Fork
Possum
Br
Burress
Hollow
Baker
Branch
GREEN
RIVER
LAKE
70
76
1752
1798
1799


N
1 Mile
5 000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 21)
(Joins sheet 27)
(Joins upper right)
(Joins lower left)
(Joins sheet 34)
2 165 000 FEET
2 185 000 FEET
2 162 000 FEET
350 000 FEET
345 000 FEET
355 000 FEET
3000 AND 5000-FOOT GRID TICKS
Stoner
Creek
Burress
Hollow
Speck
Ridge
Bass
CASEY
COUNTY
ADAIR
1798
1752
70
MoB
FkD
FkC
FkB
FkE
GaF
FrC
FrD
Ne
Se
SlD
ShC
ShB
Mh
OtA
OtB
TiOtB
DcB

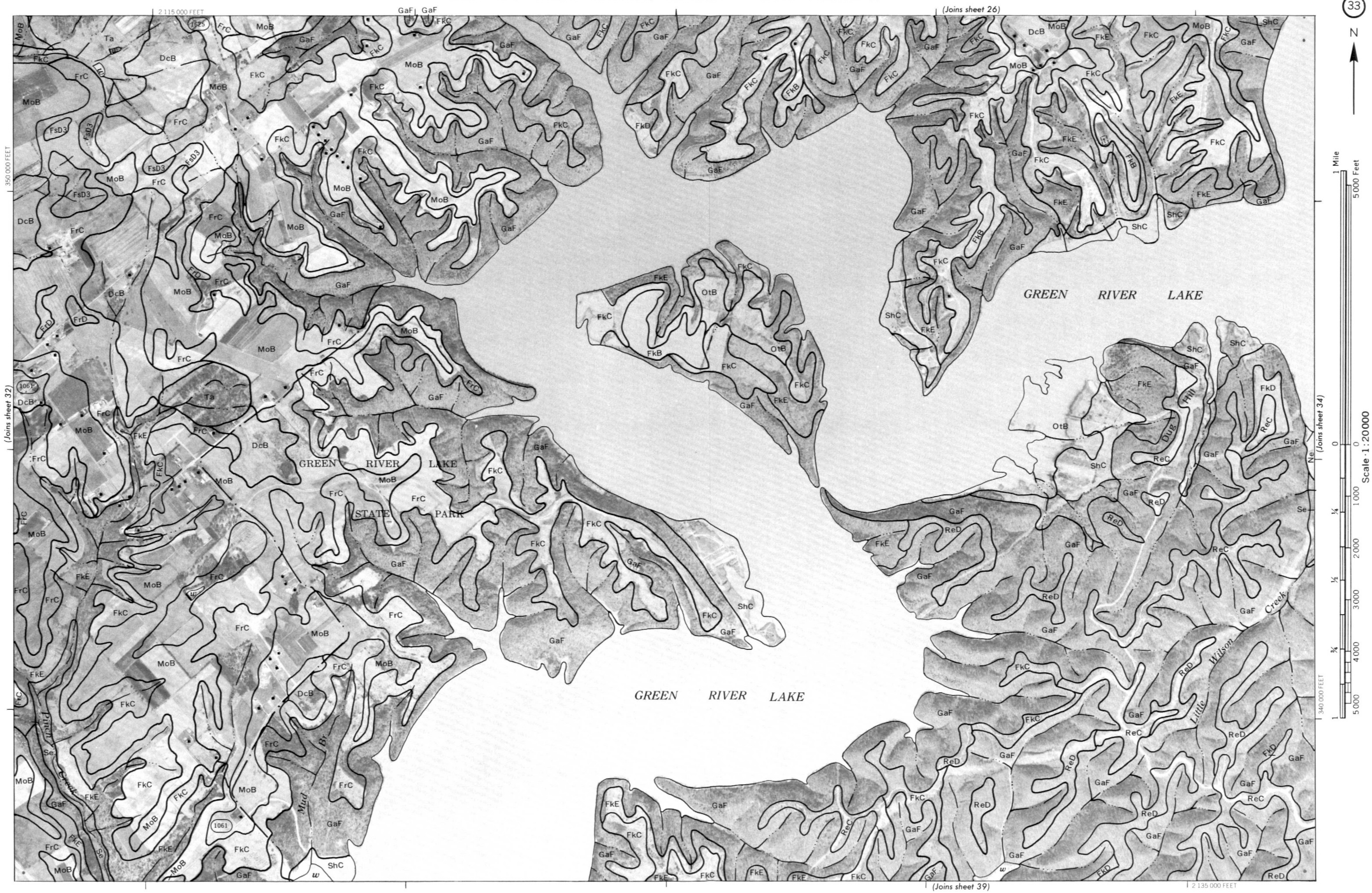

2 015 000 FEET
350 000 FEET
(Joins sheet 22)
(Joins sheet 30)
(Joins sheet 35)
2 035 000 FEET
340 000 FEET
N
HART COUNTY
GREEN RIVER
Vance Island
Scott Bend
Caven Bend
Sidebottom Island
Lobb Bend
Charlie Rhea Island
Charlie Rhea Bend
232
1464
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
1000
2000
3000
4000
5000

GREEN AND TAYLOR COUNTIES, KENTUCKY — SHEET NUMBER 30

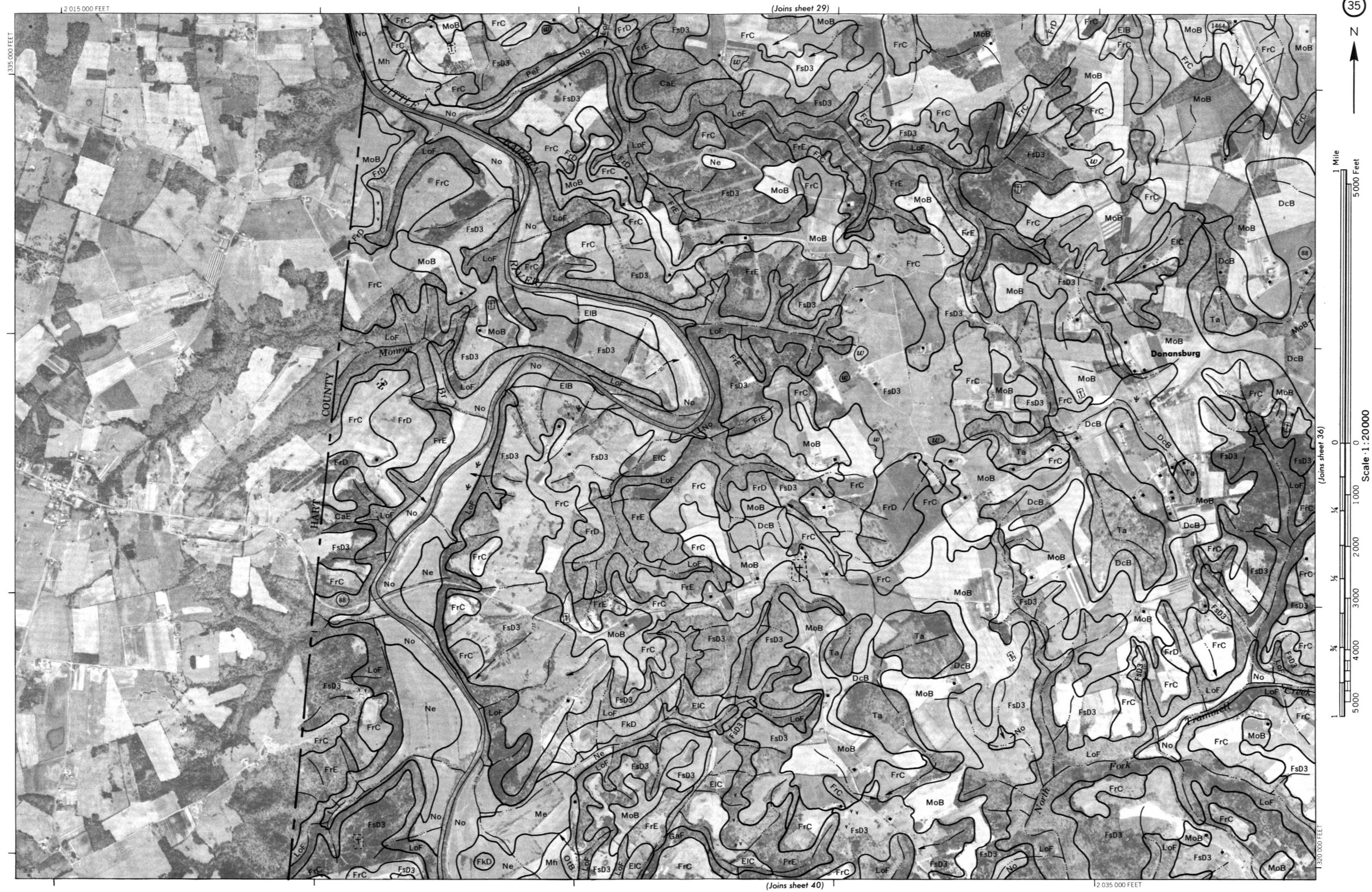



31
N
(Joins sheet 24)
(Joins sheet 30)
(Joins sheet 32)
(Joins sheet 37)
2 060 000 FEET
2 085 000 FEET
350 000 FEET
340 000 FEET
Scale 1:20000
1 Mile
5000 Feet
BIG PITMAN CR
Montgomerys Mill
GREENSBURG
(county seat)
Trace
Creek
Mill
Creek
Rocky
Run
Russell Island
GREEN
RIVER
NASHVILLE
LOUISVILLE
Spillmans Hole
Cox Hole
Boom Hole
Meadow Cr
Marcum Island
COX BEND
Sinking Rock Hole
The Drip
GREEN R


32
N
(Joins sheet 25)
(Joins sheet 31)
(Joins sheet 33)
(Joins sheet 38)
2 110 000 FEET
350 000 FEET
340 000 FEET
2 090 000 FEET
Scale 1:20000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
TAYLOR
GREEN
COUNTY
COUNTY
Whitewood
Hatcher
Burdick
LOUISVILLE AND NASHVILLE
Little Meadow Creek
Meadow Creek
GREEN RIVER
White Island
White Springs Hole
Snaps Island
Creek

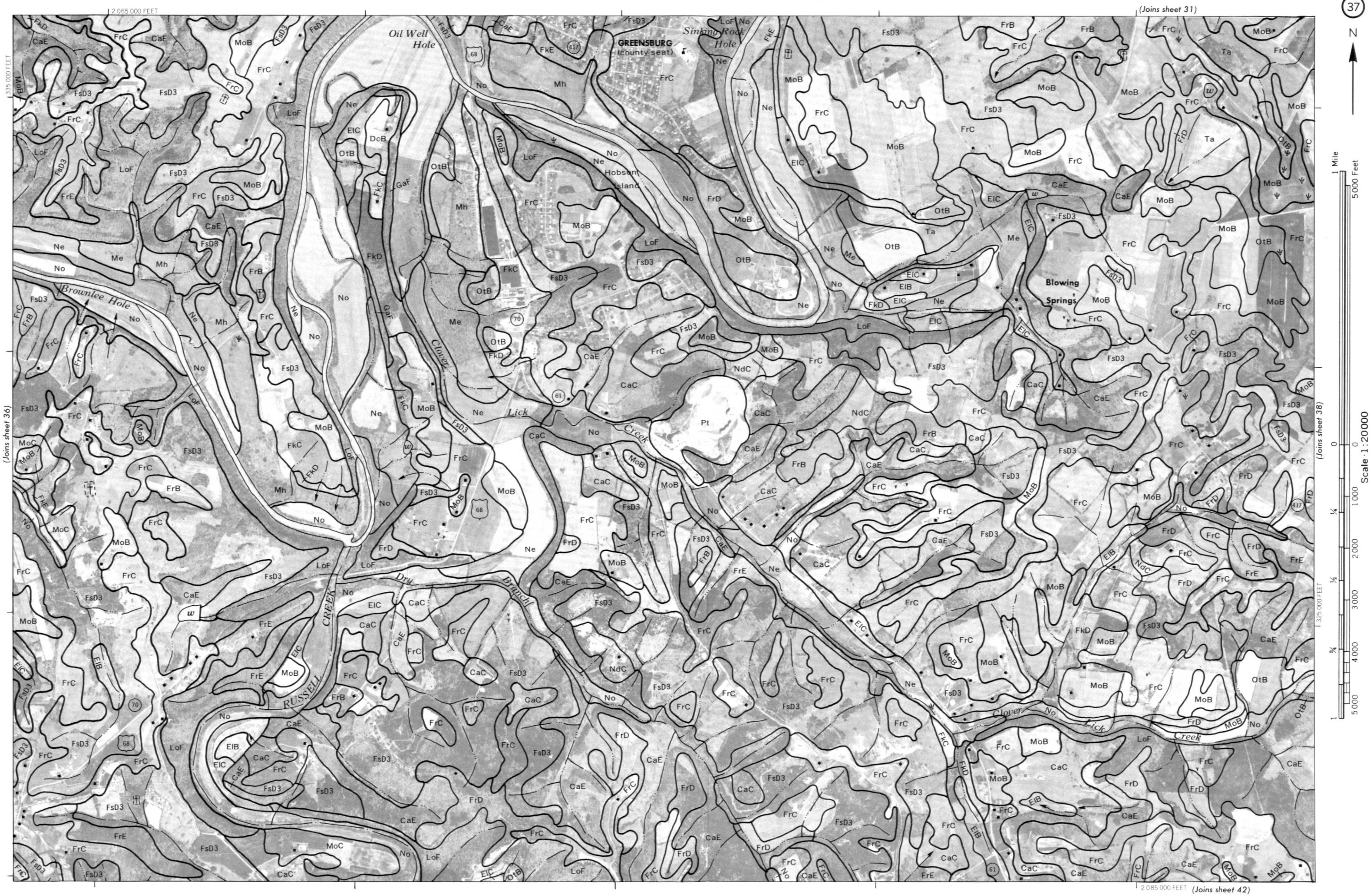

33
N
(Joins sheet 26)
(Joins sheet 32)
(Joins sheet 34)
(Joins sheet 39)
2 115 000 FEET
2 135 000 FEET
350 000 FEET
340 000 FEET
GREEN RIVER LAKE
GREEN RIVER LAKE STATE PARK
Dug Hill
Little Wilson Creek
Mud Br
Pitts Creek
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
0
1000
2000
3000
4000
5000

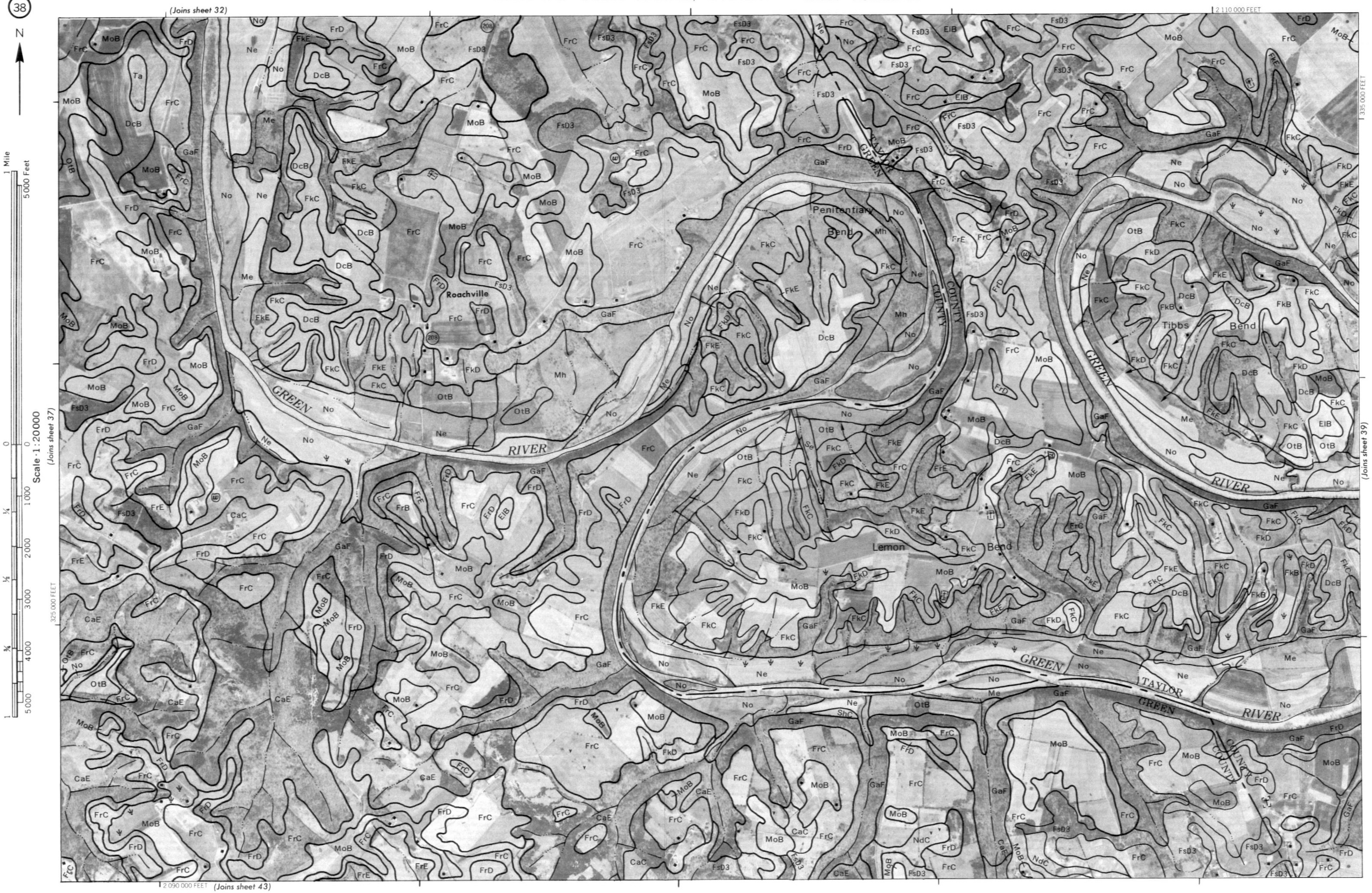

34
N
(Joins sheet 27)
(Joins sheet 33)
(Joins inset, 28)
(Joins inset, 39)
GREEN
RIVER
LAKE
Baker Br
Wilson Creek
Gooseneck Branch
Wilson Creek
Henry Hollow
Cabin Hollow
Cave Hollow
Hunter
Indian
Yuma
ADAIR COUNTY
Scale 1:20000
1 Mile
5000 Feet
2 160 000 FEET
2 140 000 FEET
350 000 FEET
340 000 FEET

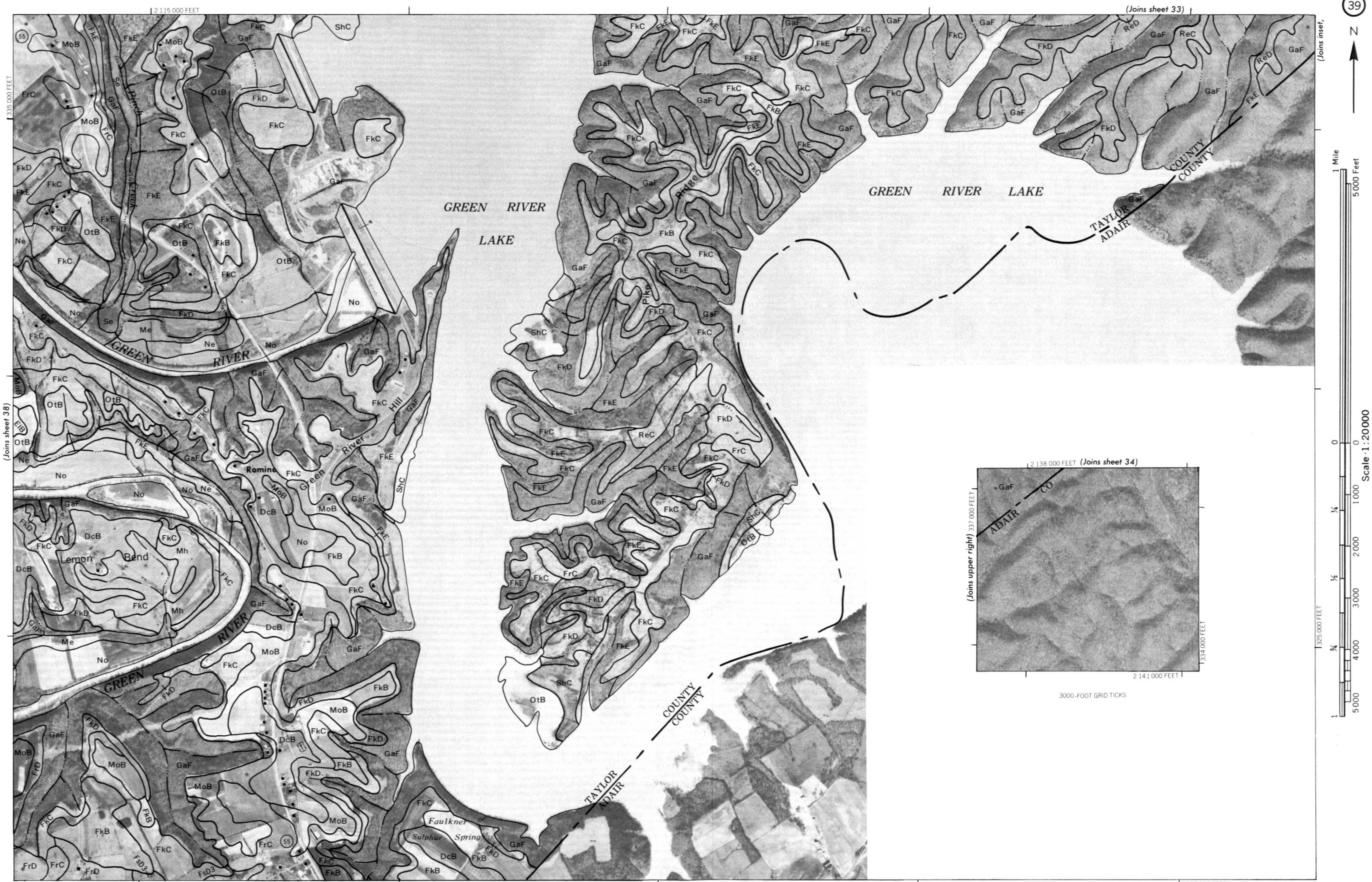

2 015 000 FEET
335 000 FEET
(Joins sheet 29)
(Joins sheet 36)
(Joins sheet 40)
2 035 000 FEET
320 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000
0
1/4
1/2
3/4
1
1000
2000
3000
4000
5000
Donansburg
LITTLE BARREN RIVER
HART COUNTY
Monroe Br
Trammell Creek
North Fork
88
1464

GREEN AND TAYLOR COUNTIES, KENTUCKY — SHEET NUMBER 36

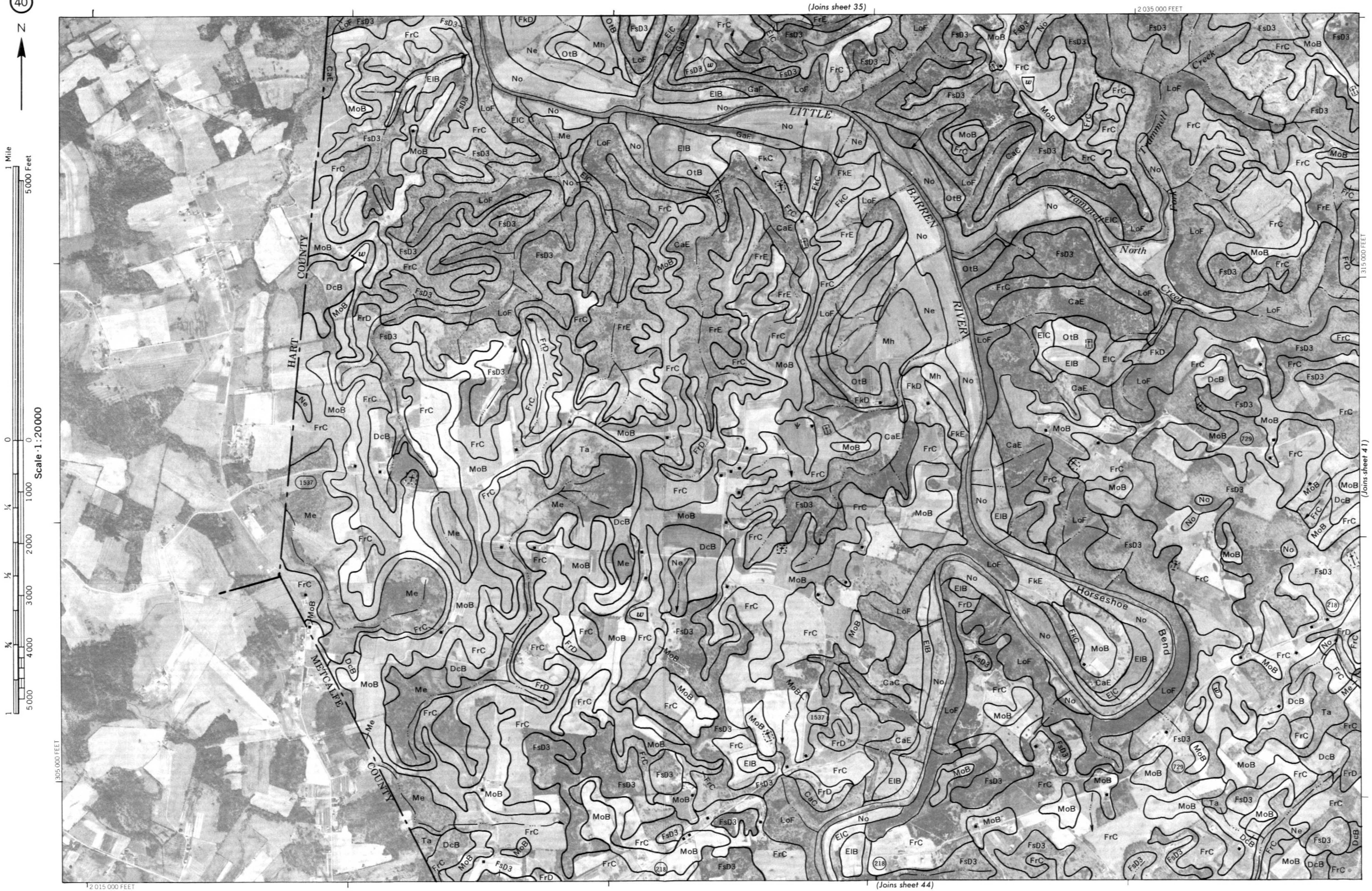
GREEN AND TAYLOR COUNTIES, KENTUCKY — SHEET NUMBER 37

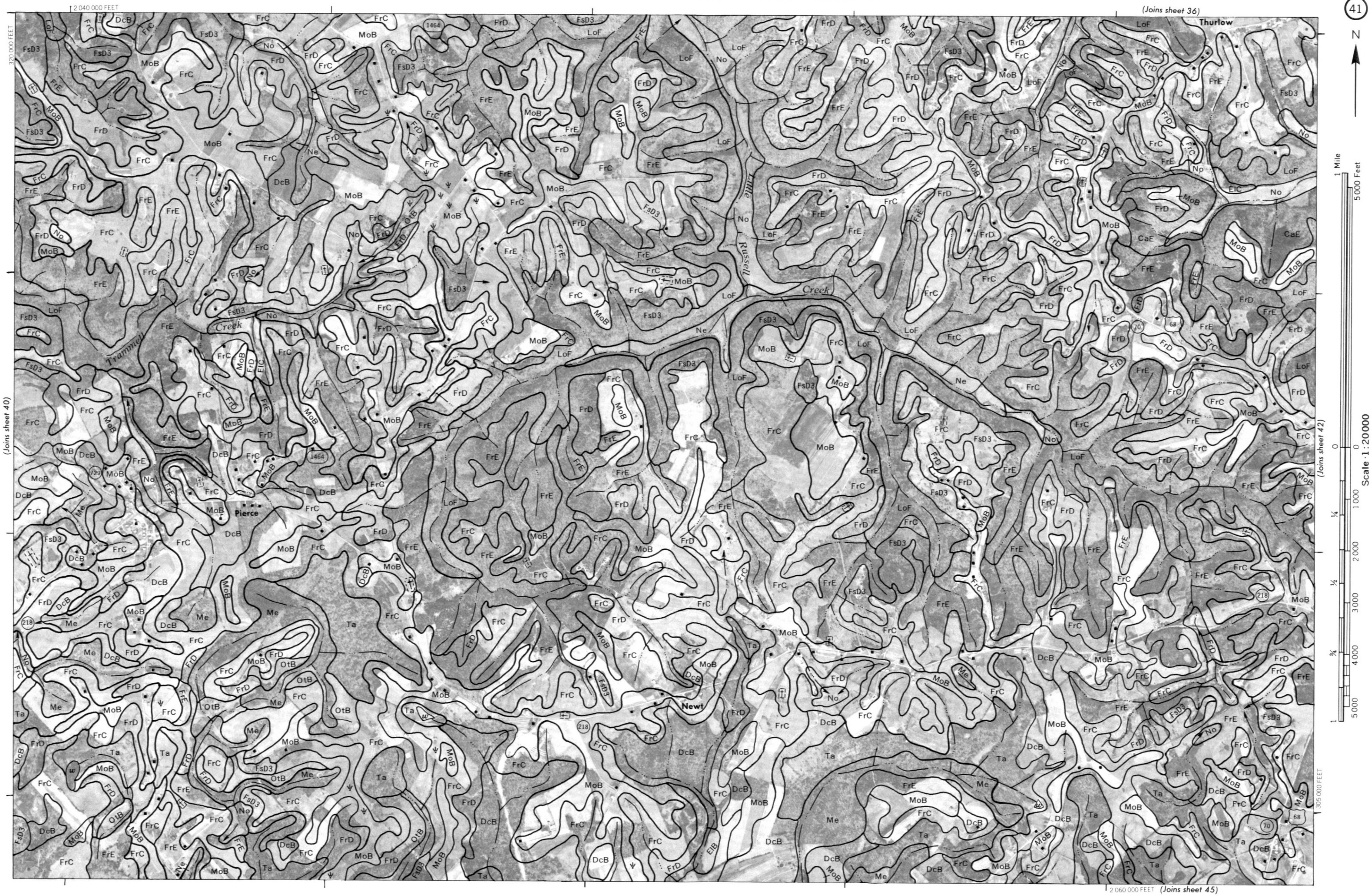



(Joins sheet 32)
(Joins sheet 37)
(Joins sheet 39)
(Joins sheet 43)
N
1 Mile
5000 Feet
Scale 1:20000
2 110 000 FEET
335 000 FEET
325 000 FEET
2 090 000 FEET
Roachville
Penitentiary Bend
Tibbs Bend
Lemon Bend
GREEN RIVER
GREEN COUNTY
TAYLOR COUNTY


39
N
(Joins sheet 33)
(Joins inset,
(Joins sheet 38)
(Joins inset, sheet 47)
2 115 000 FEET
335 000 FEET
325 000 FEET
2 135 000 FEET
GREEN RIVER LAKE
GREEN RIVER
Romine
Lemon Bend
Faulkner
Sulphur Spring
Green River Hill
Pike Ridge
TAYLOR COUNTY
ADAIR COUNTY
2 138 000 FEET (Joins sheet 34)
337 000 FEET
334 000 FEET
2 141 000 FEET
(Joins upper right)
ADAIR CO
3000-FOOT GRID TICKS
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
1000
2000
3000
4000
5000
GaF
FkC
FkD
FkE
FkB
OtB
MoB
No
Ne
Me
Mh
DcB
ShC
ReC
ReD
FrC
FrD
FsD3
Se
ElB

GREEN AND TAYLOR COUNTIES, KENTUCKY — SHEET NUMBER 40

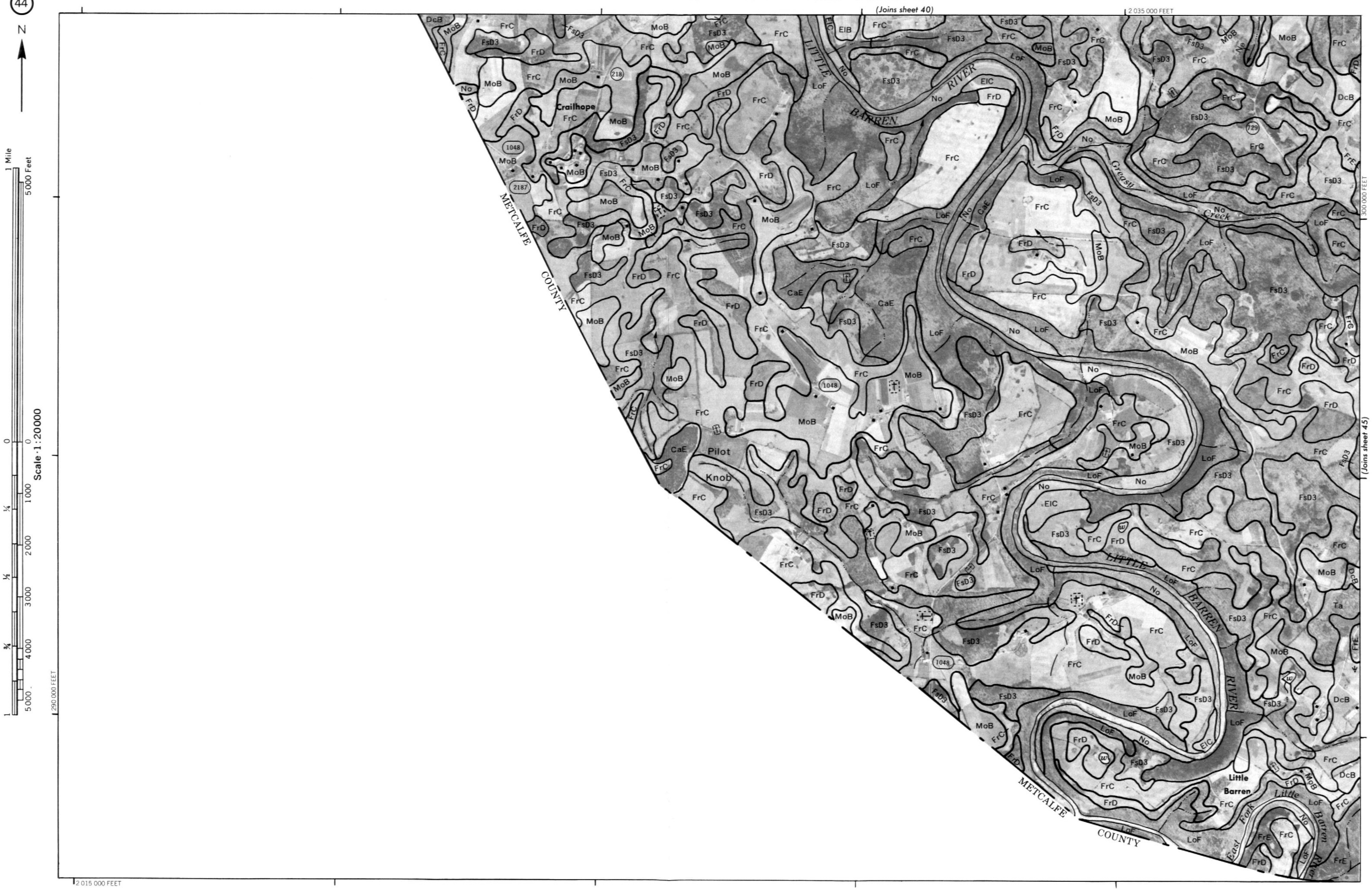



41
N
2 040 000 FEET
320 000 FEET
(Joins sheet 36)
(Joins sheet 40)
(Joins sheet 42)
(Joins sheet 45)
305 000 FEET
2 060 000 FEET
Thurlow
Pierce
Newt
Trammel Creek
Little Russell Creek
1 Mile
5000 Feet
Scale 1:20000

42

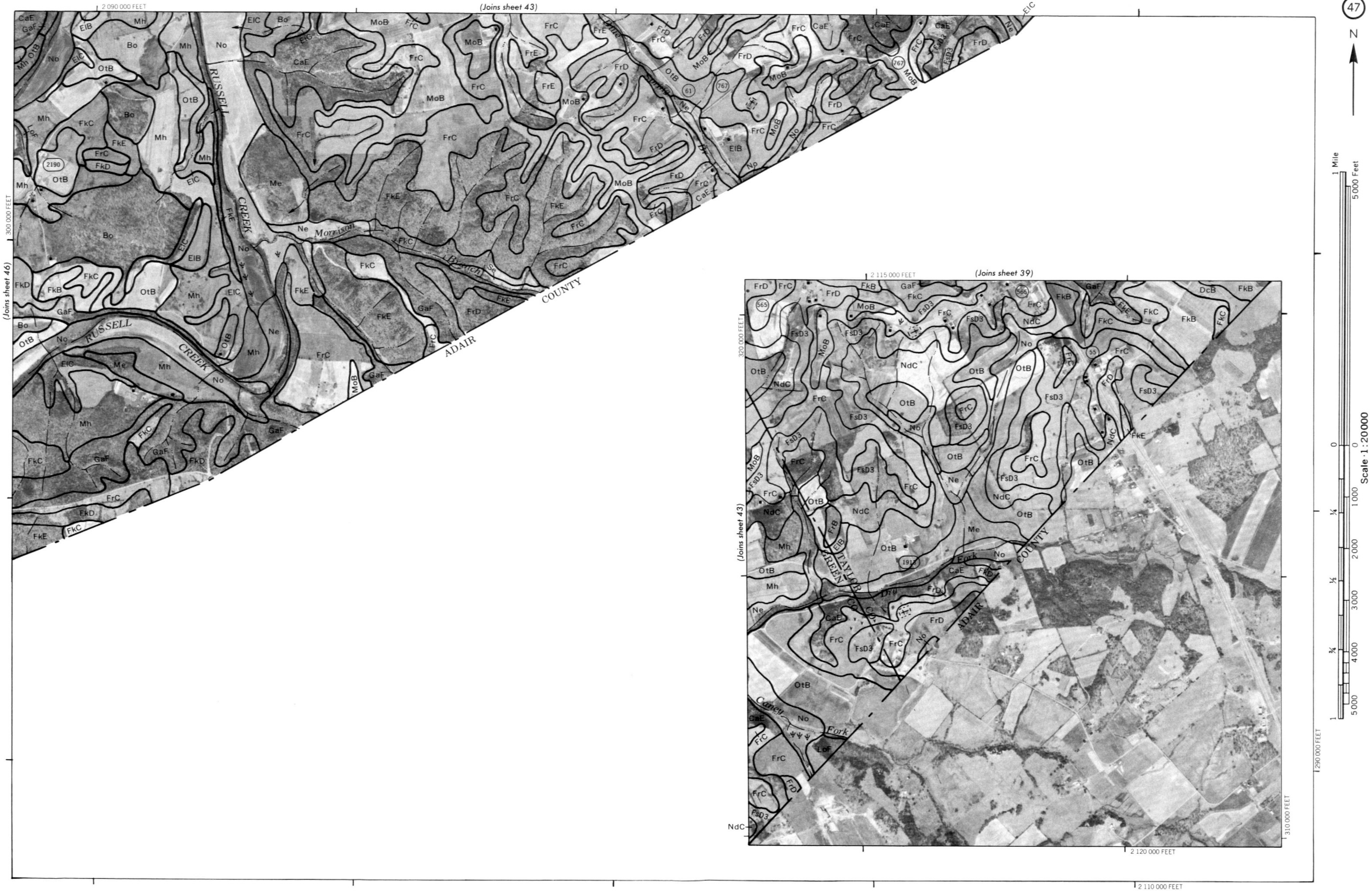

(Joins sheet 37)
(Joins sheet 41)
(Joins sheet 43)
(Joins sheet 46)
N
Scale 1:20000
1 Mile
5000 Feet
2 085 000 FEET
320 000 FEET
305 000 FEET
2 065 000 FEET
Gresham
RUSSELL CREEK
Russell Ck

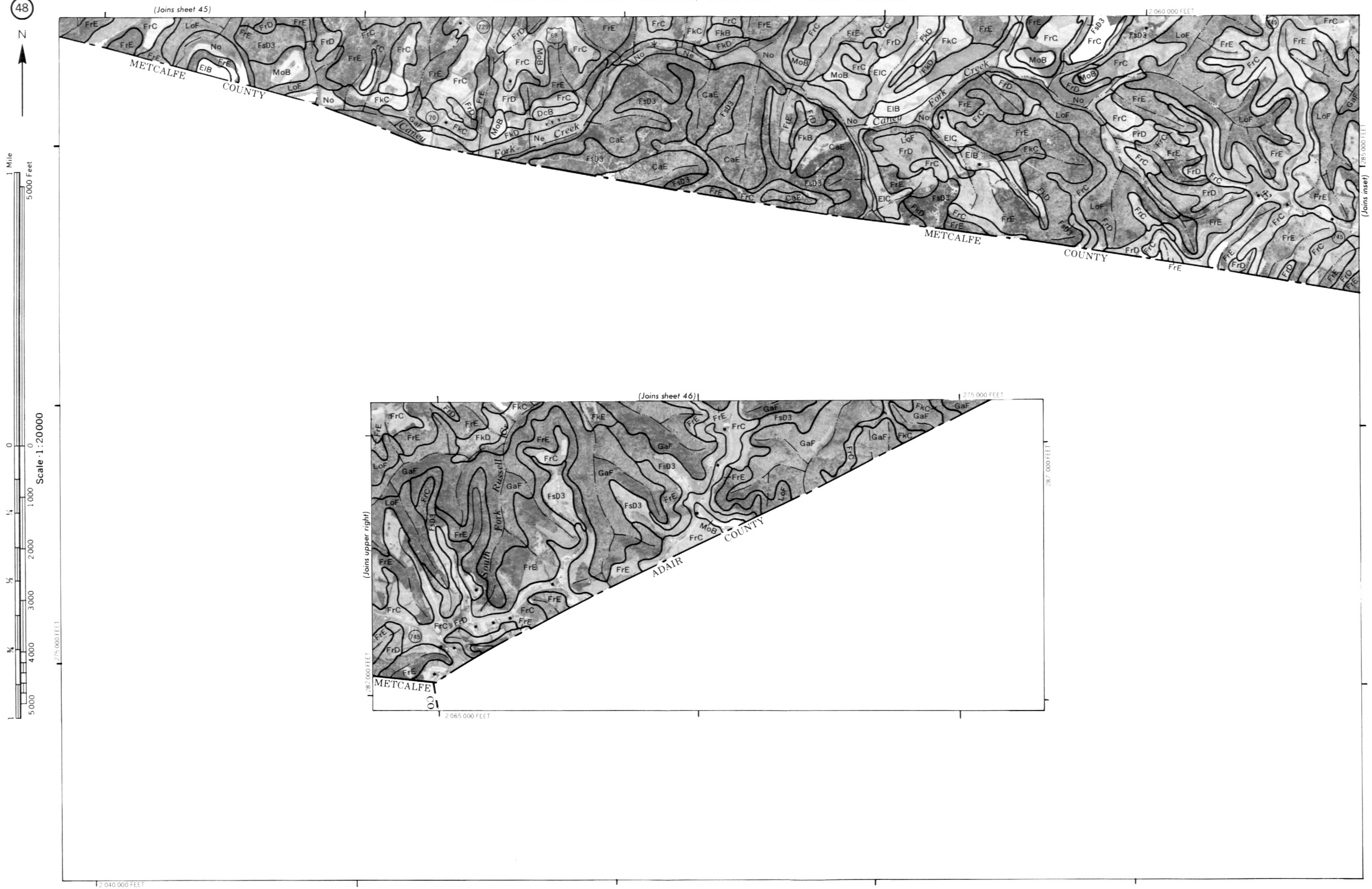
GREEN AND TAYLOR COUNTIES, KENTUCKY — SHEET NUMBER 43


(Joins sheet 40)
(Joins sheet 45)
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1
2 035 000 FEET
300 000 FEET
290 000 FEET
2 015 000 FEET
METCALFE
COUNTY
METCALFE
COUNTY
Crailhope
Pilot
Knob
Little
Barren
LITTLE
BARREN
RIVER
Greasy
Creek
LITTLE
BARREN
RIVER
East
Fork
Little
Barren
River
1048
218
2187
729
DcB
MoB
FrC
FrD
FsD3
No
ElC
ElB
LoF
CaE
FrE
Ta


45
N
2 040 000 FEET
300 000 FEET
(Joins sheet 41)
(Joins sheet 44)
(Joins sheet 46)
(Joins sheet 48)
2 060 000 FEET
290 000 FEET
Liletown
Exie
Greasy Creek
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
1000
2000
3000
4000
5000


N
(Joins sheet 42)
(Joins sheet 45)
(Joins sheet 47)
(Joins inset, sheet 48)
2 085 000 FEET
2 065 000 FEET
300 000 FEET
290 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1
Russell Creek
South Fork
Snake Branch
RUSSELL CREEK
Sulphur Fork Cr.
Bramlett
Fry
ADAIR COUNTY
487
2190


(Joins sheet 43)
(Joins sheet 46)
(Joins sheet 39)
(Joins sheet 43)
2 090 000 FEET
300 000 FEET
2 115 000 FEET
320 000 FEET
290 000 FEET
310 000 FEET
2 120 000 FEET
2 110 000 FEET
47
N
RUSSELL CREEK
Morrison Branch
ADAIR COUNTY
GREEN CO.
TAYLOR CO.
Dry Fork
Caney Fork
1 Mile
5000 Feet
Scale 1:20000


N
(Joins sheet 45)
(Joins inset)
(Joins sheet 46)
(Joins upper right)
METCALFE COUNTY
ADAIR COUNTY
METCALFE CO
Caney Fork Creek
South Fork Russell Cr.
2 060 000 FEET
285 000 FEET
275 000 FEET
287 000 FEET
282 000 FEET
2 065 000 FEET
2 040 000 FEET
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
¼
½
¾
1